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Topics in asymmetric information

THE ROLE OF FIRM DISCLOSURE POLICY

OSMAN GHANI, ACA, CFA, CAIA

Student number: 1059031

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WARWICK BUSINESS SCHOOL

THE UNIVERSITY OF WARWICK

Abstract: Topics in Asymmetric Information: The role of firm disclosure policy

In a world of asymmetric information, firms can use accounting policy as a means to signal information to outsiders and thereby, attempt to reduce the level of asymmetric information that outsiders face. I examine 'commitment' mechanisms that can be used by firms to signal information to outsiders. In particular, I examine the use of International Financial Reporting Standards (IFRS) and the use of Fair Value Accounting (FVA).

The first paper examine the influence of Uncertainty Avoidance (UAI) as introduced by Hofstede (1980), on the cost of equity for IFRS adopters in the EU. The results suggest that though UAI has a detrimental impact on the cost of equity, UAI interacts with IFRS adoption, leading to a reduction in the cost of equity for firms based in higher UAI countries that use IFRS. The results are being driven by the mandatory adopters group, who were found to benefit from IFRS adoption and a higher UAI, while voluntary and Voluntary/Mandatory adopters appear to suffer from an increase in their cost of equity. The paper therefore suggests that differences in cultural norms towards uncertainty may be able to explain part of the heterogeneity in the cost of equity exhibited by firms that have adopted IFRS.

The second paper examines the influence of FVA on the design and renegotiation of debt contracts. The paper is an extension of the Garleanu and Zwiebel (2009) model and incorporates the use of FVA as a disclosure mechanism and compares it to a setting where the firm uses Historical Cost Accounting (HCA). The model suggests that FVA firms would benefit from fewer covenants and a lower cost of debt. In subsequent extensions to the model, I incorporate the different FVA classifications and the model suggests that the Level 1 classification is expected to be more information relevant to lenders compared to the Level 3 classification.

The third paper uses the predictions from the second paper and examines the influence of FVA on a sample of US private loans obtained from LPC/Dealscan. The results of the paper suggest that the Level 1 FVA classification results in a lower number of Balance sheet covenants, and a lower cost of debt. However, we do not find positive evidence to suggest that the Level 1 classification leads to a reduction in the Covenant intensity index or an increase in the number of loan amendments. The Level 2 and 3 classifications appear to exhibit results that suggest that they are considered less informationally relevant compared to the Level 1 classification.

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Contents

I. Introduction

In a world of symmetric information, firm insiders and outsiders would have the same information and the firm's choice of accounting policy would not matter. However, once we move away from a symmetric information world to a world in which there is asymmetric information, as we see in practise, accounting policy can have an impact on how outsiders view the firm.

In his seminal paper, Akerlof (1970) showed how markets for used goods may shrink or even disappear when sellers are better informed about the quality of the good than buyers. When we apply his findings to corporate finance, in particular to capital structure, the implications are that in situations where firm insiders (managers) are better informed than firm outsiders, namely being debt and equity financers, that outsiders may discount the value of the firm and its earnings and therefore, the firm may raise less funds or raise funds at a greater cost than it would otherwise have to in a symmetric information world.

In an effort to reduce this potentially large additional cost, firms may pursue strategies that can signal their 'quality' to outsiders, and thereby mitigate any 'adverse selection' fears that the financier may have. Prior literature has shown that firms make use of mechanisms such as dividends (Bernheim and Wantz ,1995, Bhattacharya, 1979), debt issue (Leland and Pyle 1977, Myers and Majluf 1984), and share repurchases (Ofer and Thakor 1987), in order to attempt to signal their quality to outsiders, and thereby obtain more favourable terms.

Accounting policy choice has been viewed using three different perspectives: Opportunistic behaviour by managers (Mian and Smith, 1990), efficient contracting (Malmquist, 1990, and information related (Bartov and Bodnar, 1996) perspectives. This thesis examines the intersection of the three perspectives. The thesis examines certain opportunities that have arisen for firms in the past few years, it examines whether it leads to more efficient contracting and whether the financiers experience a reduction in the level of information asymmetry, via examining the capital market benefits that the firms observe.

There is a growing literature on firm disclosure policy and how this policy can be shaped in order to signal the firm's quality. Disclosure policy can be used to signal firm quality to market participants, by either increasing the disclosure level, disclosure quality, or both (Verrecchia 2001, Diamond 1985, Diamond and Verrecchia 1991), and the disclosure of information in order to reduce asymmetric information has been shown to reduce a firm's cost of capital.

In this thesis, I explore certain situations where firms may use a change in accounting disclosure policy as a means to send a signal to outsiders. In particular, the first paper focuses on International Financial Reporting Standards (IFRS) and how a firm may use IFRS adoption as a mechanism to improve its information disclosure to equity holders and how this change in disclosure policy will be viewed by market participants based on the prevailing cultural norms towards Uncertainty Avoidance. Prior literature on IFRS adoption has shown that IFRS adoption leads to an increase in foreign analyst following and a reduction in forecast errors (Alves et al 2008), an increase in abnormal return volatility and trading volume for adopting firms (Landsman et al, 2012), more positive capital market reaction for firms from lower quality information environments (Armstrong et al, 2010), to improve contracting efficiency in the private debt market (Tsui et al, 2011), and an increase in foreign institutional ownership (Covrig et al, 2007).

The first paper shows that the level of Uncertainty Avoidance (UAI) in a country, can have an effect on the cost of equity for firms that adopt IFRS. In particular, I show that though a higher UAI score is expected to lead to a higher cost of equity, the higher UAI score is able to interact with IFRS adoption to lead to a lower cost of equity for firms, and this benefit appears to be prevalent even during the financial crises of 2007-8.

However, I find that the effect of UAI is not uniform, but rather that mandatory adopters appear to benefit from a decrease in their cost of equity, while voluntary and voluntary/mandatory adopters appear to suffer from an increase in their cost of equity.

The contribution I make to the growing literature on IFRS adoption is to examine the adoption decision within the context of the cultural attitude towards uncertainty. I use Hofstede's (1980, 2001) Uncertainty Avoidance Index as the measure for a country's attitude towards uncertainty and examine the effect of IFRS adoption on the firm's cost of equity capital. The novel addition of this particular paper is the examination of whether the cultural attitude towards uncertainty is partly responsible for the heterogeneity in capital market benefits that have been observed in prior literature for adopting firms across countries.

Another key contribution of the paper is to show results that suggest that firms may incorporate their country's cultural norms and traditions when deciding on a change in disclosure policy. The results show that in certain situations, the prevailing cultural norms can have an effect on how market participants react to a change in a firm's disclosure policy.

The second paper extends the model introduced by Garleanu and Zwiebel (2009). The main contribution of the paper is to introduce a model which is able to incorporate how different

accounting disclosure regime may influence debt contracts, covenants, and the renegotiation process.

The second paper theoretically examines the design and renegotiation of covenants in debt contracts under asymmetric information. In particular, I examine the influence of two distinct accounting regimes on the design and renegotiation of covenants. The model has a setting wherein future firm investments are efficient in some states but also result in a transfer from the Lender to the firm. The model has symmetric information concerning the efficiency of the investments, however, the firm is better informed about any potential transfers compared to the lender. Information acquisition differs under the two different accounting regimes. Under the Fair Value (FVA) regime, the Lender obtains the true realisation of the transfer value prior to the investment being made. However, under the Historical Cost (HCA) regime, the lender has to acquire this information at a cost.

Given the above setting, I show that the presence of asymmetric information between the firm and the lender, and between the two different accounting regimes leads to the allocation of a greater number of decision rights (covenants) ex ante to the more uniformed party, which is the lender facing a HCA regime, then would be the case under symmetric information.

The model also suggests that firms that use FVA should be rewarded ex ante by the lender via requiring a lower yield on the debt contracts. Finally, the model suggests that the trade-off between the potential cost savings from delaying information and the potential benefits from acquiring information earlier, results in the lender requiring less strict debt covenants under the FVA regime.

In subsequent extensions to the basic model, I introduce a scenario wherein the HCA firm is allowed to revalue and thereby disclosure more information to the lender. Under this scenario, I show that the deal structuring in terms of the number of covenants and the cost of debt improves for the firm compared to the HCA regime in the base model. However, the FVA firm still observes a better structure in terms of lower covenants and cost of debt.

I also introduce a scenario in which we have two different versions of FVA, which are meant to proxy for the Level 1 and the Level 3 classifications, where the Level 1 classification is the FVA assumed in the base model and the Level 3 classification contains noise compared to the Level 1 classification. I am able to show that the Level 3 classification will be seen as less informationally relevant to the lender than the Level 1 classification, and as a consequence, will be offered a higher number of covenants and a higher cost of debt.

The contribution of the second paper is threefold. First, it is the first theoretical paper that explicitly links the introduction of FVA to covenant design and cost of debt. At present, there is no research that attempts to theoretically link FVA to covenant design, and as a result, this paper is able to extend existing literature by introducing a theoretical framework that produces a model that is able to incorporate the change in the information set, and therefore, the change in covenant design.

The second contribution of the paper is that it theoretically shows why lenders may prefer a certain disclosure policy over another, and the channels through which differences in information sets may be incorporated into the design of loan contracts, including the inclusion of covenants, the level of covenant strictness, and the cost of debt.

The third contribution of the paper is that it is able to theoretically show why lenders may discriminate between the different FVA classifications when structuring the loan.

The third paper builds on the predictions made by the model in paper 2, and tests these predictions against a sample of US private loan contracts obtained from LPC / Dealscan. The paper's main contribution is to show results that suggest that the FVA classifications have an influence on covenant design and the cost of debt. Again, this appears to be the first empirical paper that explicitly links FVA to covenant design and cost of debt. Existing literature has linked IFRS adoption to debt issuance and to cost of debt (Tsui et al, 2011) however, there is no existing research that links Fair Value accounting to covenant design and cost of debt. I examine the influence of the FVA classifications on the occurrence and number of loan covenants, the cost of debt, the covenant intensity index (covenant strictness), and the number of ex-post loan amendments.

The third paper suggests that the Level 1 classification tends to exhibit a decrease in the number of Balance sheet covenants, but observes no change in the number of Income statement or Non-financial covenants. The paper also finds that the level 1 classification also observes a lower cost of debt. For the Level 2 classification, I find that it observes an increase in the initial yield of debt and a decrease in the number of loan amendments, both of which suggest that lenders appear to find the Level 2 classification to be less informationally relevant. Finally, the level 3 classification is observed to exhibit a lower number of Income statement covenants and a lower covenant intensity index.

The third paper contributes to the capital structure and accounting literature, by providing insights into the impact of FVA on debt contract design, its influence on covenant inclusion and strictness, on loan amendments and on the cost of debt. Prior studies have tried to link

'conservative' accounting to covenant design and to cost of debt, however, I show a link between the recently introduced FVA regime and its ability to effect debt contract design and the cost of debt.

The results suggest that lenders may prefer certain accounting regimes over others and that in the context of private loan contracts, lenders appear to prefer accounting regimes that are meant to improve the information set available to them by disclosing asset and liability values, and the resulting gains and losses in a timely manner.

The thesis therefore contributes to existing literature by examining situations and conditions under which a change in firm's disclosure policy can be used to influence equity and debt financing.

Section II describes some key prior literature that sets the basis of the theoretical framework that underpins the thesis. Section III introduces the first paper: 'The influence of Uncertainty Avoidance on liquidity and Cost of equity'. Section IV introduces the second paper: 'Accounting choice and debt design'. Section V introduces the third paper: 'Debt design and Fair Value Accounting: Covenant occurrence, covenant intensity, loan amendments, and cost of debt'. Finally, Section VI provides the conclusion to the thesis.

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II. Literature Review

In this section, I examine some of the key prior literature that underpins my thesis. I also include separate literature reviews that contain the relevant literature in each of the three papers.

The natural starting point for this thesis is Akerlof (1970), who showed how markets for used goods may suffer from adverse selection due to the presence of asymmetric information. Akerlof (1970) showed that markets for used goods may shrink or even disappear when the sellers are better informed about the quality of the good compared to the buyers. The implications of Akerlof (1970) are that firms/issuers may raise a lower amount of funds or reduce the number of times they try to raise funds, when financiers face asymmetric information concerning the quality of the firm.

In an effort to reduce this potentially large additional cost, firms may pursue strategies that can signal their 'quality' to outsiders, and thereby mitigate any 'adverse selection' fears that the financier may have. Prior literature has shown that firms make use of mechanisms such as dividends (Bernheim and Wantz ,1995, Bhattacharya, 1979), debt issue (Leland and Pyle 1977, Myers and Majluf 1984), share repurchases (Ofer and Thakor 1987), the use of information intermediaries (Franco et al , 2009) and monitoring and bonding (Jensen and Meckling 1976), in order to attempt to signal their quality to outsiders, and thereby obtain more favourable terms.

Financial reporting can be used as a mechanism in reducing the information asymmetries that exist between managers and outsiders. This informational asymmetry largely exists due to managers having better information than outsiders but being reluctant to disclose information that may be detrimental to their own interests (Verrecchia 2001).

However, Leftwich (1980), Watts and Zimmerman (1986), and Beaver (1998) suggest that accounting information can be construed as a 'public' good given that existing shareholders implicitly bear the full cost associated with producing the information but are unable to charge potential investors for the use of the information. As a result, potential investors are able to 'free ride' on the information paid for by existing shareholders, which may lead to the underproduction of accounting information. These authors argue that regulation may therefore be required to ensure that the underproduction of information is mitigated.

Prior research has suggested that information asymmetry results into higher transaction costs for a firm's shares, and therefore, increases the required return on the shares. The information asymmetry hypothesis suggests that in order to maximise firm value, managers have an

incentive to reduce information asymmetry by adopting accounting standards/policies that would make financial statements more informative to financers. Bartov and Bodnar (1996) find that firms with greater information asymmetry are more likely to adopt more informative accounting methods when they become available.

Boot and Thakor (2001) examine three types of disclosures; the first is, information that complements the information available only to informed investors. The second is information that is orthogonal to that which any investor can acquire and which complements information available to all investors. The last type is information that reveals to all investors what was previously only known by the informed investors. They find that in equilibrium, all types of firms would voluntarily disclose all three types of information. They also find that complementary information disclosure by firms strengthen the investor's private incentives to acquire information.

Managers are able to reduce information asymmetry using financial reporting via two mechanisms. Managers can either 'commit' to fully disclose their private information concerning the firm, or they can engage in 'voluntary' disclose. A manager's commitment to disclose information is an ex ante decision that is meant to provide information to outsiders irrespective of the contents. However, a voluntary disclosure policy is an ex post decision made by managers to provide information after observing the content.

Leuz and Verrecchia (2000) examine German firms that have switched from Local accounting standards to an international reporting regime, which entails a greater level of commitment by the firm to increase the level of financial reporting disclosure. The authors find a reduction in the information asymmetry component of the cost of capital for the firms that have switched compared to firms that continue to follow German accounting standards.

Diamond and Verrecchia (1991) suggest that a credible commitment by managers to improve disclosures results in a higher share price due to the reduction in information asymmetry and an increase in trading liquidity. Lafond and Watts (2008) find results that suggest that firms commit to timelier recognition of losses ('Conservatism') when investors suffer from low information transparency.

Healy and Palepu (1993,1995) suggest that investor's perceptions of a firm are important variables for managers that expect to issue debt or equity. As a result, managers who expect to undertake capital market transactions have incentives to provide voluntary disclosure to financiers in an attempt to mitigate the asymmetric information, and thereby reduce the firm's cost of funding.

In this section, I have provided some existing literature that shows the impact of asymmetric information on debt and equity financing, some of the mechanisms that management may adopt to mitigate the effect of asymmetric information on financing decisions and costs, and some literature on how accounting information and choice may be used by the firm to reduce the effect of information asymmetry. Further in the thesis, I include more detailed literature reviews in each of the three papers that provide a more in-depth analysis of the existing literature relevant for that particular paper.

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III. Paper 1: 'The influence of Uncertainty Avoidance the Cost of equity'

1. Introduction

Over the past couple of decades, the adoption of International Financial Reporting Standards (IFRS), and before that, International Accounting Standards (IAS), has gained considerable attention and momentum across the globe. At present, over 100[11] countries require or allow firms to use IFRS as the basis of their financial reporting statements. Several more countries are considering either to require the use of IFRS, or to allow firms to voluntarily use IFRS. Firms have in the past, and continue to adopt IFRS voluntarily, before the mandate from their respective regulatory authorities. An important issue that has arisen in the literature surrounding capital market research concerning IFRS and IAS adoption is whether the capital market effects are heterogeneous or homogenous across firms, countries, and on the firm's adoption decision.

The aim of this paper is to attempt to explain the heterogeneity found in the economic benefits of IFRS adoption. The paper attempts to answer this question by examining whether the cross-country differences in economic benefits stemming from IFRS adoption can be explained partly by the pre-existing cultural norms in the country. In particular, we examine whether the pre-existing cultural attitude towards uncertainty avoidance, has an influence on the economic benefits that accrue from the adoption of IFRS, and whether the cross-country difference in uncertainty avoidance can explain the heterogeneity found in the economic benefits. We use Hofstede's (2001) Uncertainty Avoidance Index (UAI) as our measure for the level of uncertainty in a country. The measure relates to the level of anxiety in a country when it is confronted with an unknown future (Hofstede, 1980, 2001). Countries with higher scores for UAI indicate societies with a lower tolerance for unstructured situations and are more skeptical about the potential rewards from risky ventures and apply a higher discount rates to perceived risks. (Fidrmuc and Jacob, 2010).

We hypothesis in this paper that the move from local accounting standards to IFRS adoption was a risky venture, with uncertain risks and rewards for shareholders, firms and other market participants. However, the move from local accounting standards to IFRS adoption, with its focus on improved financial reporting quality and quantity, coupled with increased comparability across countries, should lead to improvements in the cost of equity and liquidity of firms, especially firms located in higher UAI countries, where there is a pre-existing preference for a lower degree of information disclosure (Gray, 1988). Therefore, we expect that firms in higher UAI countries gain a greater benefit from adopting IFRS since these firms have the potential to obtain larger economic benefits from

[1] Source: www.ifrs.org

adoption compared to firms in lower UAI countries, where the existing financial reporting standards are meant to more informative (Gray, 1988).

However, part of the heterogeneity in the economic benefits may be due to cross firm differences in financial reporting quality. Daske et al (2013) suggest that the economic benefits that accrue to firms are related to the degree of financial reporting transparency of the firm, with firms that engage in a greater degree of financial reporting transparency benefiting more from IFRS adoption.

Therefore, in this paper, we analyze whether IFRS adoption, controlling for increased financial reporting transparency, results in greater economic benefits for firms located in higher UAI countries, compared to adopters in lower UAI countries, and non-adopters.

We posit that the channel by which the cost of equity will be affected, will be improved transparency caused by the move to IFRS and improved financial reporting, which will be magnified in higher UAI countries due to the move to IFRS from using a pre-existing set of accounting standards that are more conservative in nature and which prefer not to disclose information.

To highlight the influence of Uncertainty Avoidance on the capital market effects, we examine cross-sectional differences in capital market outcomes for IFRS adoption firms, alongside the role of firm-level reporting incentives and the strength of regulatory enforcement. We show that Uncertainty Avoidance by itself leads to a higher cost of equity. However, uncertainty avoidance interacting with IFRS adoption, and controlling for increased financial reporting transparency and regulatory enforcement, has significant explanatory power for the direction and level of the observed cost of equity benefit. That is, we find that while UAI in itself causes a higher cost of equity, the use of IFRS and a higher UAI score leads firms to enjoy a reduction in their cost of equity, though we do not find for this benefit to fully compensate for the effect of UAI. We find that this interaction between IFRS adoption and UAI is robust even to the addition of additional explanatory factors, such as Daske et al's (2013) three financial transparency variables and Hail et al's (2013) regulatory enforcement variables.

Further, we find that the effect of UAI and IFRS is not uniform, but rather that mandatory adopters appear to benefit from a decrease in their cost of equity, while voluntary and voluntary/mandatory adopters appear to suffer from an increase in their cost of equity. On closer examination, we find that mandatory adopters tend to be larger firms, that are more closely related to Daske's (2013) three SERIOUS variables, compared to the voluntary and voluntary/mandatory groups. Our results suggest that the heterogeneity the cost of equity may be explained partly by the cultural norms of the country, and also based on whether the firm is an earlier or mandatory adopter.

Our sample is composed of firms from 22 EU member states and comprises the period 2000-2013. Our sample selection is based on our need to ensure that IFRS adoption occurs at around the same period of time for all firms, and that the IFRS accounting standards adopted by the firms are identical. The EU adoption in 2005, led to the requirement for listed entities in these member states to have to mandatorily adopt IFRS from the 1st of January, with the earlier adoption being voluntary. Therefore, listed entities in these countries adopted the same version of the IFRS[2] standards on the same date, with identical subsequent updates of accounting standards taking place at the same time for all the affected firms in the countries. Focusing on EU adoption allows us to control for any potential cross-country variations in the IFRS adopted by the sample countries.[3]

We also choose the period in question in order to allow us to examine the potential economic benefits prior to EU wide adoption, prior to the global recession, and post the global recession.

Our analysis centers on three groups of firms: voluntary, voluntary/mandatory, and mandatory adopters. We do this for two main reasons. First, the research design is based on uncertainty avoidance having a slightly different influence on the capital market effects for the three groups of firms. By decomposing IFRS adopters into mandatory, voluntary/mandatory and voluntary adopters, we are able to examine whether uncertainty avoidance causes a heterogeneous effects on the three groups.

Second, the research aim is to examine whether capital market participants differentiate between these three groups, and whether uncertainty avoidance influences this decision. By decomposing the three groups, we are able to isolate this effect.

We hypothesis that the economic benefits accruing from IFRS adoption should be different for the three types of adopters. Mandatory adopters are required by their regulatory body to use IFRS, while voluntary adopters are those that adopt IFRS prior to its regulatory mandate. We posit that for identical firms, the firm in a higher UAI country should benefit more from the earlier adoption of IFRS, given the cultural norms for predictability in the country and firm going counter to the cultural norms of its host nation, therefore, for such a firm, the incentives to go counter to its cultural norms must suggest that the benefits out-way the costs associated with the action. However, post the mandatory requirement, both mandatory and voluntary/mandatory firms in higher UAI countries should benefit more than identical firms from lower UAI countries because the improvement in the financial statements disclosure is expected to be larger for such firms compared to firms in lower UAI countries which are expected to have a pre-existing greater disclosure of accounting information prior to IFRS adoption, and due to there being a lower level of uncertainty attached to the adoption once it becomes mandatory.

[2] "IFRS as adopted by the EU".

[3] IFRS adoption is a global convergence program with individual countries converging their local GAAP standards towards IFRS on regular basis. Only the EU on 01/01/2005 fully converged their local standards to one form and continue to make all changes on the same date. Source: Pwc, Deloitte IASPLUS.

We identify voluntary IFRS adopters based on accounting standards data in WorldScope and DataStream. We create an IFRS reporting panel, which allows us to provide descriptive evidence on the adoption trends around the world.

We begin the tests by analyzing whether IFRS reporting in higher UAI countries, on average, is associated with a lower cost of equity relative to local GAAP firms, and relative to identical firms in lower UAI countries. We examine the realized annual return of equity. Using this variable, (and several others in the sensitivity analyses), we find evidence that suggests that UAI appears to cause an increase in the cost of equity as expected. However, once we introduce the interaction term for IFRS and UAI, we find that IFRS adopters in higher UAI countries appear to benefit from a decrease in their cost of equity. We control for firm level heterogeneity in the capital market effects due to differences in financial reporting quality using Daske et al's (2013) three measures for improved financial reporting. The idea behind including these variables in the tests is to illustrate that markets respond positively to changes in firms reporting transparency. These variables incorporates the improvement in firm level transparency, in terms of a change in the *reporting incentives* (SERIOUS1), a change in the *reporting behavior* (SERIOUS2), and a change in the *reporting environment* (SERIOUS3).

We find that improved financial reporting transparency, as measured by the three variables introduced by Daske et al (2013), leads a reduction in the cost of equity. This result for all three of the Daske et al (2013) SERIOUS variables is in line with our expectations and with prior research. We also control for cross-country variations in regulatory enforcement using variables introduced by Hail et al (2013). When we bifurcate the IFRS group into mandatory (M), voluntary/mandatory (VM) and voluntary adopters (V), we find that for the M group, their interaction terms with IFRS are significant and negative, suggesting that they benefit from a reduction in the cost of equity. While we find that for the VM group, they exhibit a significant and negative relationship, suggesting that they suffer from an increase in the cost of equity.

In Section 6, we bifurcate our sample into different time periods to examine the effect of adoption and the behavior of the three different adopters. We find that during the 2000-04 period (Pre-EU adoption), and during the 2005-07 period, only the M group exhibits significant and negative interaction terms. We also find that during the 2008-13 time period, the M group exhibit significant and negative interaction terms, while the VM group exhibits a significant and positive term, suggesting that the influence of UAI on IFRS holds even during the period of the Global Recession of 2007-8.

To benchmark these findings, we incorporate other cross-country variables used in prior research, namely Schwartz et al (2005,2007), Hofstede (1980, 2001), GLOBE, La Porta et al (2006) and Religious demographics, and use these variables to explain the cross sectional variation. The results from the robustness tests and from the main analysis, support our main analsysis and suggests that there is some evidence that the heterogeneity in the economic benefits from IFRS adoption may be caused by cross-country differences in uncertainty. We generally find that similar proxies introduced

by Schwartz et al (2005,2007),GLOBE, La Porta et al (2006), Religious demographics and Hofstede's other cultural dimensions, all suggest that there is some evidence to suggest that mandatory adopters in countries with a higher pre-existing need for certainty or conservatism, tend to experience greater economic benefits compared to their peers from countries where there is a lower need for certainty or conservatism.

The paper's three main contributions to the literature are as follows. First, the study is among the first to highlight and test the effect of Uncertainty avoidance (UAI) on the capital market effects for IFRS adopting firms. Existing studies tend to focus on firm-level differences, such as transparency, incentives, and capital market idiosyncrasies. This study shows that country level uncertainty avoidance can play a significant role in determining the capital market effects of IFRS adoption. In doing so, we contribute to existing literature around the heterogeneity of capital market effects of IFRS adoption (Daske et al 2013, Ball et al 2003, Leuz et al 2003). Second, we find results that suggest that the influence of cultural norms can be long lasting in certain cases. When we bifurcate the adoption sample into voluntary and mandatory adopters, we are able to show that only the mandatory adopters benefit from a decrease in their cost of equity, while voluntary and voluntary/mandatory appear to suffer from an increase in their cost of equity. The findings add to existing literature that has found evidence that firms are able to use dividends (Bhattacharya 1979), share repurchases (Ofer and Thakor 1987) or issue debt (Leland and Pyle 1977) as mechanisms to signal their quality to market participants. We find evidence to support existing literature on disclosure quality and quantity, and how disclosure quality can be used to signal firm quality to market participants, by either increasing the disclosure level, disclosure quality, or both (Verrecchia 2001, Diamond 1985, Diamond & Verrecchia 1991). Lastly, we use a dataset that includes the Global recession of 2008, existing studies on IFRS adoption are mostly based on and around the mandatory adoption of IFRS by the EU. However, this study attempts to examine whether the capital market outcomes are persistent across time or whether previously observed outcomes are time period specific.

In section 2, we develop the main hypotheses. In section 3, we delineate the research design and describe the data. In section 4, we conduct some univariate analysis on the main variables of interest. In section 5, we describe the full period analyses and results. In section 6, we examine the sub-periods and examine whether firms observed heterogeneous time affects. In section 7, we discuss the robustness checks. Section 8 concludes.

2. Hypothesis Development

We start the research with the notion that the underlying motivations for why managers may change standards, including the changing economics of the firm, play an important role in determining the economic consequences surrounding IFRS adoption. Some firms may adopt IFRS in name only, without making any material changes to the financial statements.

Others may be faced by economic changes, such as potential growth opportunities or entry into a new market, which may provide management with an incentive to improve the financial reporting policy of the firm and to signal its increased commitment to transparency to market participants. Akerlof (1970) noted that in certain situations, there may be markets in which buyers and sellers have different levels of information (known as 'asymmetric information') concerning the quality of the product, which leads to an 'adverse selection' problem. That is, a problem arises for the buyer because the buyer does not know ex ante if he is being deceived by the seller in terms of the quality of the product. IFRS adoption could be a part of a broader set of changes that firms make in order to become more transparent and to improve their corporate governance, in an attempt to reduce the 'asymmetric information' problem that investors face.

Similarly, there can be numerous other incentives around IFRS adoption, and not all firms are equally likely to embrace the increased commitment to transparency envisioned in IFRS prepared financial statements. As a result of such differences in incentives, and provided that markets are able to differentiate between the incentives firms face, a level of heterogeneity in the economic effects of IFRS adoption should exist.

Several prior literature, such as Ball et al (2000), Ball et al (2003), Leuz (2003), Ball and Shivakumar (2005), Leuz et al (2006) and Bradshaw and Miller (2008), highlight the role of a firm's reporting incentives in explaining observed accounting properties and actual practices. IFRS, similar to any other set of accounting standards, allow management discretion in terms of using their judgement and using measurements that are ultimately based on private, unobservable information. The manner in which firms use this allowed discretion depends on manager's reporting incentives, which are influenced by numerous factors, including firm characteristics, market forces, and country level institutional factors. In this paper, we examine and test the role of uncertainty avoidance on the firm-level incentives, in the context of IFRS adoption.

There is evidence that suggests a link exists between uncertainty avoidance (UAI), liquidity, and cost of equity. For example, Cardon and Marshall (2008) find that UAI was shown to significantly impact technology acceptance. Huang (2007) uses Hofstede's UAI and hypothesizes that countries with a higher score for UAI will experience a disproportionately slower growth in industrial sectors where information is less available. Huang bases the hypothesis on Rigotti et al's (2008) model, that shows that tolerance of uncertainty is necessary for the growth of 'emerging sectors about which little is known' between capital market participants. In Rigotti et al's model, market participants that possess a personality

that lacks uncertainty tolerance, will be reluctant to enter into informationally opaque industries, which lack clear market information and signals. The lack of the uncertainty tolerance personality in a given society is shown to lead to a slower adoption rate of new technologies and a slower growth rate of such informationally opaque industrial sectors. Durnev et al (2004) find that stock prices in certain countries are less informative than in others due to information being scarce in certain countries and industries. Rigotti et al (2008) argue that firms engaged in the earlier stages of the industrial cycle, or those using more complex means of production, usually tend to release less information.

Hofstede (2001) argues that a higher score for uncertainty avoidance implies that society has a lower tolerance for unstructured situations, uncertainty, and ambiguity. Individuals in higher uncertainty avoidance countries are more likely to be skeptical about the potential benefits from undertaking riskier ventures, and as a result, will desire a higher return for such projects. Whereas, individuals in lower uncertainty avoidance countries will tend to exhibit a lower tolerance for uncertainty and ambiguity, and are more willing to accept change and undertake a greater level of risk.

Fidrmuc and Jacobs (2010) argue that in high UAI countries, investors and management have a cultural need for predictability in the form of a greater level of financial stability within firms. Jaggi and Low (2000) argue that UAI is inversely related to the level of disclosure in societies, with a higher level of UAI implying a lower level of disclosure.

Gray (1988) found that countries with a higher score for UAI are more secretive, therefore a negative relationship is predicted between UAI and disclosure. He also argues that for professionalism in accounting standard setting and judgment, a country requires a lower score for UAI. A lower score for UAI implies that there is a belief in having as few rules as possible and for personal judgment to be more easily tolerated. Uniformity, consistency and comparability are argued to be determined by the level of UAI, with a higher score implying a stronger preference for uniformity. A preference for uniformity implies a desire to control for law and order and a need for written rules and regulations, while conformity implies that absolute values and truths exist.

In terms of conservatism in accounting standards, Gray (1988) argues that uncertainty avoidance directly influences conservatism, and that a higher score for UAI implies that society would want to implement more conservative accounting standards. The level of secrecy in a country can be related to the level of conservatism, in that it requires a cautious approach to corporate financial reporting. Gray (1988) argues that a preference for secrecy

is consistent with a higher score for uncertainty avoidance, due to a need to restrict the level of information disclosure.

Therefore, we predict that UAI is expected to have a negative (harmful) effect on the cost of equity for firms given its preference for secrecy and need to restrict information disclosure (Gray, 1988), and a greater need for financial stability and predictability within firms, with individuals in higher UAI countries being more hesitant of the potential benefits from risky ventures and who tend to apply a higher discount rate to the perceived level of risk (Fidrmuc and Jacobs, 2010).

H1: Companies in higher uncertainty avoidance countries tend to have a higher cost of equity.

In order to address the above asymmetric information problem faced in certain countries and in certain industries, IFRS adoption has been proposed by the IASB (International Accounting Standards Board). IFRS have been introduced and mandated by various regulatory authorities and accounting boards across the world, in an effort to increase and improve firm level disclosures (Hope, 2003), to increase comparability across countries (Defond et al, 2011, De Franco,2011), in order to reduce the set of regulations for preparers (Dunn and Maydew, 2004), in order to potentially reduce information acquisition costs (Brown and Hillegeist, 2007, Bae et al, 2008), and in order to reduce the likelihood of technical errors.

Hope (2003) finds that when compared to local accounting standards, IFRS adoption leads to a set of financial statements that are of a higher quality and that provide a greater quality of disclosure. In essence, IFRS adoption changes the information set available to market participants, by changing the quality and quantity of public information disclosed by firms.

The association between high uncertainty avoidance and the benefits from IFRS adoption put forward in the literature reflects the notion that the move from local accounting standards towards a global set of accounting standards, i.e., IFRS adoption; was an undertaking that was deemed to be risky with unknown future economic benefits ex ante. Following from Cardon and Marshall (2008), Rigotti et al (2008) and Hofstede (2001), higher uncertainty avoidance societies should exhibit a higher intolerance towards acceptance of technological advancements, such as IFRS. As a result, we expect that adoption of IFRS should result in greater economic benefits for such societies compared to lower uncertainty avoidance societies, given the pre-existing regulations and systems in place in higher uncertainty avoidance countries will be of poorer quality compared to lower

uncertainty avoidance countries (Hope, 2003). As a result, the 'distance' between the pre-existing quality of accounting standards, and the standards introduced by IFRS, is expected to be higher for higher uncertainty avoidance countries (e.g., Greece, etc), compared to lower uncertainty avoidance countries (e.g., UK, etc), where the pre-adoption accounting standards were deemed to be of a higher quality in terms of disclosure quality and quantity.

Therefore, we posit that the significant channel by which the expected economic consequences (cost of equity) will be affected, will be improved transparency caused by the move to IFRS and improved financial reporting, which will be larger in higher UAI countries due to the pre-existing lower levels of transparency and comparability in financial statements. Companies in higher UAI countries tend to value secrecy and prefer to not disclose information (Gray, 1988), therefore, IFRS by its very nature will change the quality and quantity of the information that the firm will be required to release to market participants. For lower UAI companies, the difference between the disclosure requirements under IFRS and under their local GAAP are expected to be smaller than the difference between the disclosure requirements required under IFRS and local GAAP for companies in higher UAI countries. Therefore, market participants will benefit from the improved level of transparency and information disclosure that will be created, especially for higher UAI companies, and this expected to result in a lower cost of equity.

IFRS adoption results in a greater level and quality of firm level information being released to the market. A greater quality and quantity of firm level information has been found to increase stock liquidity, reduce cost of capital and improve valuation (Verrecchia, 2001; Diamond and Verrrecchia, 1991). Hence, IFRS adoption should reduce the cost of capital. Countries with a higher score for uncertainty avoidance are expected to have poorer quality of existing accounting standards, compared to the quality and quantity of disclosure enshrined under IFRS. As a result, firms in higher uncertainty avoidance countries are expected to benefit more from IFRS adoption compared to firms from lower uncertainty avoidance countries, where the existing quality of financial reporting standards is of a higher quality.

Firms that oppose the switch to IFRS or to the increased reporting requirements under IFRS and to becoming more transparent will be less likely to make material changes to their reporting policies (Daske et al, 2013). Thus, there may be 'label' and 'serious' adopters in a country; label adopters being those firms that do not materially change their reporting policies, while serious adopters being those firms that do change their reporting policies and make an increased effort to become more transparent. However, even with perfect

enforcement, due to the degree of discretion allowed to management and differing incentives, reporting behavior is expected to differ across firms (Frings et al, 2012; Leuz, 2006).

Controlling for all other factors, countries with a higher quality of enforcement regimes and with regulatory environments that lead to stronger reporting incentives are more likely to experience significant capital market benefits around the introduction of IFRS. In such countries, mandatory adopters are less likely to escape with adopting IFRS purely as a 'label'. (Daske et al, 2013)

In terms of the interaction of uncertainty avoidance and IFRS, we expect a positive (beneficial) relationship to exist between the economic consequences from IFRS adoption and uncertainty avoidance. This is due to a higher level of uncertainty avoidance implying a greater intolerance to adopt innovation, such as a new set of financial reporting standards. As a result, we expect that the existing accounting standards in place in higher UAI countries would be of poorer quality compared to lower UAI countries, as evidenced by Hope (2003) and in line with the arguments put forward by Jaggi & Low (2000) and Gray (1988); the adoption of IFRS is expected to benefit market participants more in higher UAI countries because the adoption will result in a greater improvement in the quality and quantity of financial information disclosed to the market, compared to firms from lower UAI countries. Firms from higher UAI countries are expected to prepare financial statements with a lower quantity of disclosure and to be conservative in their financial reporting behavior, thereby reducing the information content of existing financial statements. Firms from lower UAI countries are expected to prepare financial statements that are less conservative in nature and contain a greater level of disclosures, thereby offering a more informative set of financial statements. As a result, the incremental benefit to market participants is expected to be greater for firms located in higher UAI countries than from lower UAI countries.

H2: The cost of equity benefits that accrue from IFRS adoption, will be positively affected by the level of uncertainty avoidance.

Next we decompose firms into mandatory and voluntary adopters. Daske et al (2008) argue that the capital market benefits should be different across voluntary and mandatory adopters. They argue that due to mandatory adopters being forced to adopt IFRS, this group should respond less to the adoption. Voluntary adopters are more likely to make significant changes to their reporting policies, and as a result should experience a greater benefit. However, voluntary IFRS adoption may be part of a broader strategy of increasing corporate

transparency and as a result; the benefits cannot be solely attributed to IFRS (Daske et al, 2013).

In the case of mandatory adoption, firms are mandated by their regulator to adopt IFRS and they have little choice in ignoring this directive. However, for a voluntary adopter, there is no regulatory mandate, hence, IFRS adoption is a choice available to such firms. They have the option to adopt IFRS early or to remain using local accounting standards. Siegel et al (2011), show that going counter to a nation's cultural norms can result in extreme economic consequences. Thus, if a firm adopts IFRS in a country with a higher UAI score, it will be going counter to the norms of society. Hence, we would expect that prior to the mandatory adoption of IFRS, this type of firm should be able to be in a better position to signal its quality to market participants by its adoption behavior, that is, the earlier adoption of IFRS can be construed as a signalling mechanism by market participants, when analysed in conjunction with the prevailing social attitude towards uncertainty avoidance. Mandatory adoption by its very nature, can-not be used as a signalling mechanism by the firm, given that the decision to adopt is not present, but rather, the move is due to a regulatory mandate. Only in the case of a voluntary adoption, can a firm be in a position to signal its quality, based on its adoption decision and the prevailing level of uncertainty avoidance.

An identical firm that adopts early in a country with a lower UAI score should not benefit to the same degree as a firm from a higher UAI country. Firms from lower UAI countries already prepare financial statements that are of a higher quality or disclosures that are of greater quantity, as a result, the adoption of IFRS is not seen by market participants as a greater commitment to financial reporting transparency, then would be the case for a firm from a higher UAI country. Firms from higher UAI countries prepare their financial statements using accounting standards that allow for the lower quality or quantity of financial statement disclosure. A move towards the adoption of IFRS would be seen as a bigger commitment for such firms, given the existing financial reporting requirements for the firm.

H3: Voluntary adopters in countries with a higher UAI score are more likely to experience greater benefits compared to identical firms that are mandatory adopters, local standards users, or from lower UAI countries.

Moving on to the expected economic benefits accruing to Mandatory adopters; such firms adopt IFRS due to the presence of a regulatory requirement to do so. However, IFRS adoption is expected to confer benefits to the adopting firm. We expect that the level of economic benefits will vary depending on the level of uncertainty avoidance present in the

country. Firms from higher UAI countries are expected to have existing accounting standards in place that are conservative in nature. IFRS adoption will force firms to move towards a set of standards that are less conservative and which compel the firm to increase the level of financial disclosure. The incremental benefit to market participants due from the move towards IFRS adoption is expected to be greater for higher UAI firms than lower UAI firms. Post adoption, the economic benefits should exist for both mandatory and voluntary/mandatory[4] adopters if IFRS improves the information set made available to market participants.

We also expect that post IFRS adoption, both mandatory and voluntary/mandatory adopters should exhibit similar economic benefits. Voluntary/mandatory adopters should exhibit the same level of economic benefits as mandatory adopters because market participants should treat both sets of firms in a similar manner post adoption, given that both types of firms will prepare financial statements under the same accounting regime. Post IFRS adoption, voluntary/mandatory adopters should not be treated differently from mandatory adopters by market participants.

H4: Both Mandatory and Voluntary/Mandatory adopters in countries with a higher UAI score are more likely to experience greater economic benefits compared to identical firms that are IFRS adopters or local standards users from lower UAI countries, and the economic benefits from adoption are positively influenced by the financial reporting behavior of the firm.

In principle there are several additional explanations for heterogeneous capital market effects around IFRS adoption, which we attempt to mitigate or address in the research design. First, it is possible that the heterogeneity in capital market returns is being driven by firm level differences in terms of transparency or the quality of corporate governance. We incorporate this variable in the research by using the three variables introduced by Daske et al (2013), which we term SERIOUS. These variables are constructed in a manner that allows us to control for changes in the quality of financial statements and thereby incorporate any improvement in financial statement transparency.

Second, the heterogeneity in the capital market outcomes may be due to cross country differences in relation to regulatory enforcement and/or compliance. We attempt to control for this by using the enforcement variables introduced by Hail et al (2013) in our analysis.

[4] Voluntary/Mandatory adopters are those firms that adopted IFRS early, and continue to do so once IFRS becomes mandatory in their respective countries.

Thirdly, the heterogeneity in the capital market outcomes may be due to cross country differences in relation to the version of IFRS adopted by the sample countries. We control for this by using the EU as our sample, thereby ensuring that the version of IFRS adopted is the same for each country during our sample period.

Finally, the heterogeneity in the capital market outcomes may be due to other cross-country differences that can be better captured by variables introduced and used in prior research. In order to rule out this possibility, we incorporate other cultural variables in the robustness tests and find that UAI is the only robust cross-country variable that is able to provide statistically significant results in all of the tests. The other variables are found generally provide results that are very similar to UAI.

3. Research Design and Data

The research design relies on the variation in the capital market benefits of IFRS adoption due to uncertainty avoidance (UAI). We therefore focus on IFRS adopters in the main analyses, and decompose the group into mandatory, voluntary/mandatory, and voluntary adopters, in order to examine the expected differences. We first need variables that illustrate whether a firm year observation includes IFRS, Mandatory, Voluntary/Mandatory or voluntary adoption. This is done by coding each observation from data obtained from Worldscope and partitioning the mandatory, voluntary/mandatory, and voluntary adopters according to information provided by Deloitte LLP and PWC LLP. Next, we need a variable that incorporates the effect of UAI on adopting firms. We create this variable by incorporating the product of the IFRS/Mandatory/Voluntary indicator variable and the UAI score for the country. We also incorporate a variable that allows us to differentiate between 'Serious' and 'Label' adopters (Similar to Daske et al, 2013), as well as proxies for the economic outcomes and a set of control variables. We then estimate the following model:

$$CoE = \beta_0 + \beta_1 IFRS + \beta_2 UAI + \beta_3 SERIOUS + \sum \beta_j Controls_j + \varepsilon \quad (1)$$

Where CoE stands for cost of equity (i.e., the Realized return). IFRS is a binary variable that is coded '1' for years in which a firm follows IFRS. We replace IFRS with Voluntary, Voluntary/Mandatory, and Mandatory variables in subsequent regressions. Voluntary is coded as '1' for firms that adopted IFRS before it because mandatory[5]. Mandatory is coded as '1' for years in which a firm follows IFRS for the first time due to a regulatory mandate. Voluntary/Mandatory is coded as '1' for firms that adopted IFRS early and continue to use IFRS once it becomes mandatory. UAI denotes the UAI score each country has been assigned by Hofstede (2001). SERIOUS denotes the three financial reporting transparency

[5] Voluntary observations relate to firm years that continue IFRS prior to the EU adoption in 2005.

classifications introduced by Daske et al (2013), and Controls denotes a set of control variables (mentioned below).

With this model, we can compare the effect of UAI on IFRS adopters, and whether the influence of UAI is different for voluntary, voluntary/mandatory, and mandatory adopters. For the purpose of the research, we use Ordinary Least Squares (OLS) regressions with robust Standard errors, OLS with Fixed Effects for Industry, OLS with Fixed Effects for Year, and cluster by Firm. We present our results using OLS regression with Fixed effects for Industry and Year, and clustered by Firm.

3.1.1. IFRS reporting Classification

We begin by first coding the financial statements for each firm year observation. The IFRS coding involves two steps. First, we construct a firm year panel dataset with a binary indicator variable. Second, we determine the switch year, that is, the point in time when IFRS reporting is used by the firm.

First, we use a narrower definition of IFRS compared to Daske et al (2013), when we code the binary IAS variable. This classification relies primarily on what firms claim they are doing in their financial statements. We begin from the 'Accounting standards followed' dataset in Worldscope/DataStream, as it offers the best coverage for this information set. We identify IFRS firm years if Worldscope/DataStream indicates that the financial statements are based on 'International Standards', 'IFRS' or 'International Standards and some EU guidelines'. This leads to a total of 20,398 firm year IFRS observations that serve as the basis of the analysis.

We code a firm year as being US GAAP, if the 'Accounting standards followed' code indicates that the firm year is either 'US standards' or 'US GAAP reclassified from local standards'. We code a firm as 0 (non IFRS adopter), if the 'Accounting standards followed' code in Worldscope/DataStream identifies the firm year as being 'Local standards', 'EU standards', 'Not Disclosed', 'Local standards with EU guidelines', 'Other'; amongst other classifications shown in table 1.

Table III-1 shows the classification criteria we have used in the coding analysis for this paper.

Table III-1: Accounting Standards classification based on Worldscope/Datastream.

WorldScope Description	Coding for analysis
We code firm-year observations as IFRS if one of the following cases applies:	**IFRS**
International standards	
International standards and some EU guidelines	
IFRS	
We code firm-year observations as US GAAP if one of the following cases applies:	
US Standards (GAAP)	**US GAAP**
US GAAP reclassified from local standards	
We code firm-year observations as Local if one of the following cases applies:	**Local**
Local standards	
EU standards	
Specific standards set by the group	
Not disclosed	
Local standards with some EU guidelines	
Local standards-inconsistency problems	
EEC standards- inconsistency problems	
Local standards with some OECD guidelines	
Local standards with a certain reclassification for foreign companies	
Other	
Local standards with EU and IASC guidelines	
International standards-inconsistency problems	
International standards and some EU guidelines-inconsistency problems	
Local standards with some IASC guidelines	
Local standards with OECD and IASC guidelines	

The table describes the coding of firm year observations to the reporting categories of IFRS, US GAAP, or Local GAAP, using the different accounting standards classifications. The coding is based on how a firm year is classified in the 'Accounting standards followed' dataset in Worldsope/Datasteam.

The second step involves identifying the 'switch year'. IFRS adoption may take one of two forms; a firm prepares financial statements in accordance with IFRS because it is mandated to do so by its regulatory authority (Mandatory adopters), or it may adopt IFRS before it becomes mandatory for it to prepare financial statements using these standards (Voluntary adopters).

We identify the period in which IFRS becomes mandatory for a country via the PWC website and IASPlus (Deloitte LLP). We use this to determine the firms that have used IFRS for the first time because of it becoming mandatory. These firms are then labelled mandatory adopters in the analysis. Those firms, that adopt IFRS before it becomes mandatory, are coded as being voluntary adopters in the analysis.

A firm year coded as being IFRS, can either be Mandatory, Voluntary/Mandatory, or voluntary, but not all three. Hence, the mandatory, Voluntary/Mandatory and voluntary sub-

groups are mutually exclusive, and together comprise the entire IFRS group. Table III-2 below shows the classification and composition of the dataset by country.

Table III-2: Dataset composition by country.

		IFRS		USGAAP		Local GAAP		Voluntary		Voluntary / Mandatory		Mandatory	
Country	Firm Years	Firm Years	%	Firm Years	%	Firm Years	%	Firm Years	%	Firm Years	%	Firm Years	%
AUSTRIA	270	250	93%	7	3%	13	5%	37	14%	137	51%	76	28%
BELGIUM	373	284	76%	16	4%	73	20%	20	5%	157	42%	107	29%
CZECH	45	38	84%	2	4%	5	11%	8	18%	15	33%	15	33%
DENMARK	267	225	84%	-	0%	42	16%	16	6%	66	25%	143	54%
FINLAND	699	541	77%	-	0%	158	23%	11	2%	108	15%	422	60%
FRANCE	2,511	1,609	64%	26	1%	876	35%	48	2%	102	4%	1,459	58%
GERMANY	4,061	2,859	70%	272	7%	930	23%	337	8%	1,348	33%	1,174	29%
GREECE	563	457	81%	10	2%	96	17%	2	0%	24	4%	431	77%
HUNGARY	140	97	69%	-	0%	43	31%	8	6%	47	34%	42	30%
ICELAND	20	19	95%	-	0%	1	5%	1	5%	3	15%	15	75%
IRELAND	228	169	74%	7	3%	52	23%	-	0%	27	12%	142	62%
ITALY	1,527	1,216	80%	10	1%	301	20%	8	1%	52	3%	1,156	76%
LUXEMBOURG	78	72	92%	-	0%	6	8%	10	13%	40	51%	22	28%
NETHERLANDS	689	511	74%	46	7%	132	19%	13	2%	58	8%	440	64%
NORWAY	633	518	82%	59	9%	56	9%	2	0%	67	11%	449	71%
POLAND	359	267	74%	-	0%	92	26%	8	2%	47	13%	212	59%
PORTUGAL	191	165	86%	-	0%	26	14%	3	2%	51	27%	111	58%
SLOVAKIA	10	8	80%	-	0%	2	20%	2	20%	6	60%	-	0%
SLOVENIA	51	40	78%	-	0%	11	22%	-	0%	6	12%	34	67%
SPAIN	796	573	72%	1	0%	222	28%	3	0%	20	3%	550	69%
SWEDEN	997	777	78%	-	0%	220	22%	6	1%	72	7%	699	70%
UK	5,890	4,276	73%	57	1%	1,557	26%	5	0%	367	6%	3,904	66%
Total	20,398	14,971	73%	513	3%	4,914	24%	548	3%	2,820	14%	11,603	57%

The Dataset comprises a maximum of 20,398 firm year observations from 22 countries with fiscal year ends between January 1,2000 and December 31,2013, for which we have sufficient Worldscope/Datastream data to classify the observation as being either IFRS, US GAAP, or Local GAAP. The table reports the number of firm year observations and percentages by country. The columns IFRS, US GAAP and Local GAAP represent the number of observations that fall in each category and the resulting percentage of each category to the total observations from that country. The columns Voluntary and Mandatory report the number of firm years that fall within either Voluntary or Mandatory adopters and the percentage shows the fraction of each category as a function of the IFRS total for each country.

3.1.2. UAI Classification

The key variable in the research is the UAI variable and the effect of the interaction between UAI and IFRS adoption on the cost of equity. We also want to examine whether the influence of uncertainty avoidance is different for mandatory and voluntary adopters.

The measure of country level uncertainty aversion used in the research, is obtained from a cross country psychological study conducted by Geert Hofstede (1980, 2001) between 1967 and 1973 that involved a matched sample of respondents: 88,000 IBM local employees that held similar marketing and customer service position, that were recruited and employed in 50 countries across the world.

Hofstede constructed the index by averaging the answers to psychological survey questions based on three dimensions related to individual attitudes towards uncertainty: rule orientation, employment stability, and stress.

Hofstede's Uncertainty avoidance index (UAI) data is available for over 50 countries,[6] however, we only examine 22 countries from this dataset. The sample includes the 22 EU countries due to our interest in examining the relationship between IFRS adoption and UAI. As a result, we only include EU member states that adopted a similar version of IFRS on the same date across the sample countries, thereby allowing us to examine the effect of UAI on countries that adopt an identical set of accounting standards on the same date.

The UAIs for the 22 countries are reported in Table III-3, where a higher UAI score implies a higher level of uncertainty avoidance and a relative lack of uncertainty tolerant entrepreneurs, employees, and investors.

Table III-3: Hofstede's Cultural dimensions, Schwatz, and other national variables.

COUNTRIES	Hofstede				Schwatz et al						
	PDI	IDV	MAS	UAI	EMB	HIE	MAST	AA	IA	EGA	HAR
Austria	11	55	79	70	3.19	1.66	3.721	3.89	4.97	5.06	4.62
Belgium	65	75	54	94	NA	NA	NA	NA	NA	NA	NA
Czech Republic	57	58	57	74	3.77	2.07	3.447	3.07	4.59	4.59	4.66
Denmark	18	74	16	23	3.29	1.73	3.74	4.08	4.77	5.15	4.32
Finland	33	63	26	59	3.53	1.7	3.393	3.61	4.84	5.03	4.59
France	68	71	43	86	3.1	1.98	3.574	4.31	5.37	5.18	4.5
Germany	35	67	66	65	3.18	1.91	3.752	3.75	4.92	5.14	4.71
Greece	60	35	57	100	3.47	1.78	4.126	3.83	4.43	4.98	4.68
Hungary	46	80	88	82	3.73	2.04	3.74	3.35	4.46	4.51	4.38
Iceland	30	60	10	50	NA	NA	NA	NA	NA	NA	NA
Ireland	28	70	68	35	3.6	1.86	3.835	3.62	4.38	4.99	3.9
Italy	50	76	70	75	3.61	1.47	3.6	2.84	4.86	5.38	4.91
Luxembourg	40	60	50	70	NA	NA	NA	NA	NA	NA	NA
Netherlands	38	80	14	53	3.36	2	3.801	3.65	4.78	5.08	4.19
Norway	31	69	8	50	3.55	1.41	3.619	3.29	4.67	5.29	4.64
Poland	68	60	64	93	4.05	2.51	3.638	3.04	4.24	4.55	4.24
Portugal	63	27	31	99	3.51	1.85	3.901	3.41	4.51	5.39	4.57
Slovakia	100	52	100	51	4.05	2.11	3.706	2.61	4.15	4.58	4.53
Slovenia	71	27	19	88	3.82	1.44	3.466	3.42	4.93	4.58	4.77
Spain	57	51	42	86	3.36	1.84	3.681	3.59	4.98	5.2	4.64
Sweden	31	71	5	29	3.23	1.73	3.61	3.97	5.07	4.96	4.54
United Kingdom	35	89	66	35	3.55	2.34	3.876	3.86	4.42	5	3.81

Table III-3 above shows the key national variables used in the paper. The first set of variables relate to Hofstede's (2001) cultural dimensions: PDI relates to Power Distance Index, IDV relates to Individualism, MAS relates to Masculinity, and UAI relates to Uncertainty Avoidance and is the primary variable used in the paper. The next set of variables relate to Schwartz et al (2005): EMB relates to the level of Embeddedness, HIE relates to the level of Hierarchy, MAST relates to the level of Mastery, AA relates to the level of Affective Autonomy, IA relates to the level of Intellectual Autonomy, EGA relates to the level of Egalitarianism, and HAR relates to the level of Harmony.

[6] Hofstede (2001) and geert-hofstede.com

Table III-4: World Religions, La Porta et al, Globe, CIFAR and Hail et al.

COUNTRIES	World Religions (CIA DATASET)			La Porta et al		Globe	CIFAR	Hail et al
	CATH	PROS	ORTH	Anti-SD	Disclose	G-UAI	ACC_STDS	ENF_EU
Austria	65%	4%	0%	0.21	0.40	5.16	62	0
Belgium	57%	2%	0%	0.54	0.80	NA	68	0
Czech Republic	10%	1%	0%	0.33	0.40	4.44	NA	0
Denmark	0%	80%	0%	0.46	0.80	5.22	75	0
Finland	0%	77%	1%	0.46	1.00	5.02	83	0
France	85%	2%	0%	0.38	0.80	4.43	78	0
Germany	34%	34%	2%	0.28	0.40	5.22	67	0
Greece	1%	0%	98%	0.22	0.40	3.39	61	0
Hungary	37%	14%	2%	0.18	0.20	3.12	NA	1
Iceland	4%	79%	0%	0.25	0.40	NA	NA	0
Ireland	87%	5%	1%	0.79	0.80	4.30	81	1
Italy	88%	1%	1%	0.42	1.00	3.79	66	0
Luxembourg	87%	2%	0%	0.28	0.60	NA	NA	1
Netherlands	30%	20%	0%	0.20	0.60	4.70	74	0
Norway	1%	89%	0%	0.42	0.20	NA	75	0
Poland	90%	0%	1%	0.29	0.20	3.62	NA	0
Portugal	85%	1%	0%	0.44	1.00	3.91	56	0
Slovakia	62%	8%	4%	0.29	0.60	NA	NA	0
Slovenia	58%	90%	2%	NA	NA	3.78	NA	0
Spain	94%	3%	0%	0.37	0.60	3.97	72	0
Sweden	1%	75%	1%	0.33	0.40	5.32	83	1
United Kingdom	10%	32%	0%	0.95	1.00	4.65	85	0

Table III-4 above shows the key national variables used in the paper. The first set of variables relate to the percentage of a nation's population following one of the major religions of the world: CATH relates to Catholics, PROS relates to Protestants, and ORTH relates to Orthodox. The next set of variables relate to the national level characteristics produced by La Porta et al (2006): Anti SD relates to the level of Anti Director rights index, and Disclose relates to the level of organisation level disclosure in the country. The next set of variable is obtained from the Globe cultural network: G-UAI relates to the globe constructed measure for UAI in a country. The next Variable is ACC_STDS, which is obtained from CIFAR (1995) and relates to the quality of accounting standards in a country. The last set of variables have been obtained from Hail et al (2013) and relate to the degree of Enforcement change in the EU around the time of IFRS adoption.

We also include several other variables in Table III-3 and Table III-4 that are used in the robustness tests. These variables include Hofstede's (2001) three other cultural dimensions, namely, Power distance Index (PDI), Individualism (IDV) and Masculinity (MAS). We also include cultural variables introduced by Schwartz et al (2005,2007), that have also been used to proxy national level variation in personality traits. Table 4 also includes the religious demographics of each sample country as another variable in the robustness tests. We also include the Disclose and Anti-self-Dealing (Anti-SD) variables from La Porta et al (2006), alongside the UAI variable constructed by the Globe cultural research initiative. We also include the quality of accounting standards pre-IFRS adoption from CIFAR (1995). Finally, we include the ENF_EU variable from Hail et al (2013), which is meant to control for the degree of change in regulatory enforcement around the time of IFRS adoption in the EU.

The interaction term between UAI and IFRS is constructed in two steps. In the first step, we identify if a firm year observation includes IFRS. This allows us to build a panel data of

observations in which we are able to segregate observations as either being IFRS, US, Local GAAP, Mandatory, Voluntary/Mandatory, and Voluntary adopters. This yields into a panel that classifies a firm year observation in a binary variable. The panel is coded 1 if the firm uses IFRS, or 0 if it is US GAAP or Local GAAP. The same methodology applies to US coding, and to the Mandatory, Voluntary/Mandatory, and Voluntary classification.

The second step involves creating the variable that is able to examine the effect of UAI on IFRS adoption. This is done by multiplying the country's UAI score against the panel created from step 1. This yields the interaction term of IFRS_UAI, M_UAI, VM,UAI, and V_UAI; that represent the interaction between IFRS, Mandatory, Voluntary/Mandatory, and Voluntary adopters respectively.

3.1.3. 'Serious' Versus 'Label' Classification

Daske et al (2013) introduce three variables that are constructed in order to categorize firms as either being 'Label' or 'Serious' adopters. These variables categorize firms using firm-level changes in reporting incentives, actual reporting behaviour, and the external reporting environment around the switch to IFRS. These variables are meant to examine the financial reporting transparency of firms.

When we examine IFRS adoption alongside the SERIOUS variables introduced by Daske et al (2013), we would expect that if firms attempt to improve their financial reporting transparency policy; that they should benefit more from the liquidity, and cost of equity benefits compared to firms that do not attempt to improve their financial reporting transparency. This expectation arises from market participants assigning a greater value to financial statements that contain a lower level of accruals, and thereby, contain a lower level of management based judgment and potential manipulation. The expectation is based on existing literature such as Francis et al (2005), who find that poorer accruals quality (AQ)[7] is associated with larger costs of debt and equity.

Daske et al (2008) find that the liquidity, cost of capital and Tobin's Q benefits only occur in countries where firms have incentives to be transparent and where legal enforcement is strong.

Daske et al (2013) examine the liquidity and cost of capital effects around voluntary and mandatory IFRS adoption and introduce a classification of "Serious" and "Label" adopters using firm level changes in reporting incentives, actual reporting behaviour, and the external

[7] AQ is measured as the standard deviation of residuals from regressions relating current accruals to cash flows.

reporting environment. Daske et al (2013) refer to "serious" adopters as those firms that are "serious" about the changes in their reporting strategy.

They use three proxies to partition the firms into serious and label adopters. The idea is to attempt to identify firms that experience substantial increases in their reporting incentives. These firms are deemed more likely to make major improvements to their reporting strategy. Two of the proxies focus on the determinants of firm's incentives, while the remainder relies on the firm's actual reporting behaviour.

The *Reporting Incentives* ("serious 1") is calculated as the first and primary factor (out of the two that are retained) when applying factor analysis to the following six firm attributes: firm size (natural log of the US$ market value), financial leverage (total liabilities to total assets), profitability (return on assets), growth opportunities (book to market ratio), ownership concentration (percentage of closely held shares), and internationalisation (foreign sales over total sales). The factor increases in size, leverage, profitability, growth and foreign sales, and decreases in ownership concentration, similar to Daske et al(2013).

The second proxy relies on the accrual based characteristics of financial reporting. The *Reporting Behaviour* ("serious 2") variable is constructed as the ratio of the absolute value of accruals to the absolute value of cash flows (multiplied by -1, so that higher amounts signify more transparent reporting) The variable is then scaled by operating cash flows in order to serve as a performance adjustment. Accruals are calculated as the difference between net income before extraordinary items and the cash flow from operations.

The third proxy relies on the ability to capture external changes affecting a firm's reporting incentives. In line with Daske et al (2013), we compute the *Reporting Environment* ("serious 3") variable as the natural log of the number of analysts following the firm (plus one). For firms without any analyst coverage in I/B/E/S, we set the analyst following to zero.

In order to reduce measurement errors and to allow for the incentives to change over time, we calculate 3 year rolling averages relative to the observed year for each reporting proxy. We then use the distribution of changes to classify firms with above median changes compared to their industry peers. Firms with rolling averages above the median industry moving averages are coded as "serious" adopters (coded as 1), and with below median changes as label adopters (coded as 0). This classification methodology is slightly different compared to that used in Daske et al(2013) in order for us to allow firms to be classified as

more or less transparent compared to their peers and to allow firms to move between being more or less transparent over the time period under question. [8]

3.1.4. Hail et al (2013)

Next, we include the cross-country variation in regulatory enforcement introduced by Hail et al (2013). The ΔENF_EU is a binary indicator variable that takes on the value of "1" if the country has observed substantive change in enforcement. Hail et al (2013) identify the change in substantive enforcement based on a survey of national regulators, audit firms, and on publicly available information. [9]

3.1.5. Cost of equity

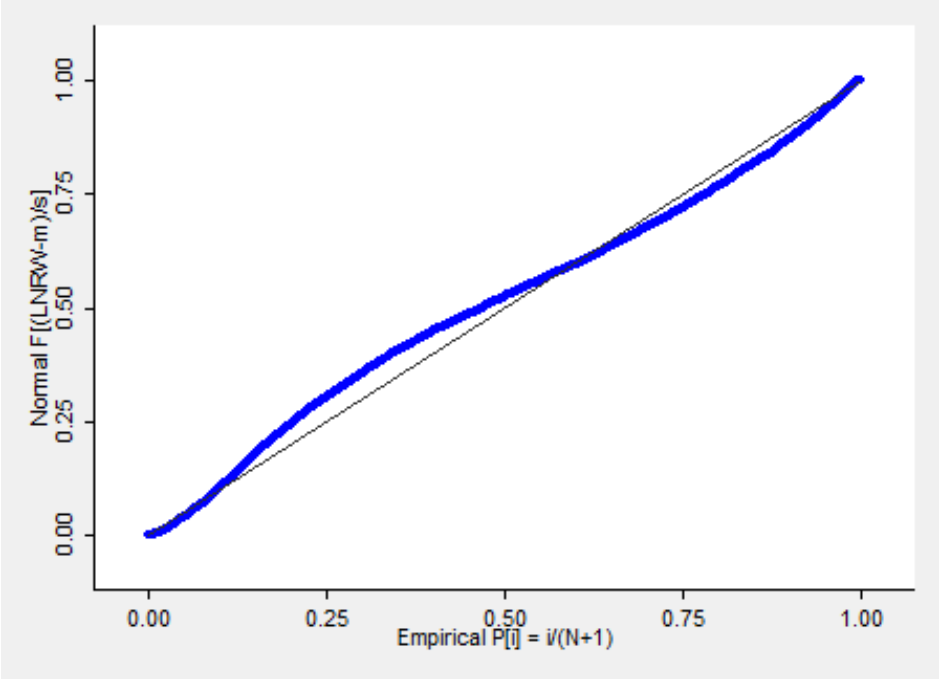
We use the cost of equity based on weekly realized returns. The cost of equity dependent variable is the ex-post realized returns of equity. Gebhardt et al (2001) and Fu et al (2012), argue that the ex-post realized returns should be an unbiased estimator of the unobservable cost of equity in an efficient financial market. Similar to Fu et al (2012), we construct this variable by compounding the 52 weekly returns in the calendar year. We then take the natural log of the variable as in Daske et al (2013).

$$LN(Realised\ Return_t) = LN((1 + r_1) \dots (1 + r_{52}) - 1).$$

[8] Daske et al(2013) use their methodology in order to examine the influence of IFRS adoption in 2005, so their methodology is centred around this time period. We adjust their methodology to allow our classifications to be more dynamic, and to allow us to have 'label and 'serious' adopters throughout our sample period.

[9] Hail et al (2013), page 170, Table 6.

Figure III-1: PNORM of LNRW



The above figure shows the pnorm graph for LNRW, which is a standardized normal probability plot of the dependent variable. As can be seen from the above graph, the variable is approximately normally distributed.

Table III-5 below shows the summary of the key variables used in the analysis including the three dependent variables mentioned above and the control variables. Cross country variables such as the UAI index and Hail's et al (2013) is mentioned separately in Table III-3 and Table III-4. The composition of the IFRS, US GAAP and local accounting data is reported separately in Table III-2.

Table III-5: Summary statistics for key variables used in the analysis.

Dependent Variables:	**Observations**	**Mean**	**Std Dev**	**P1**	**P25**	**Median**	**P75**	**P99**
Realised Returns	20,398	0.0194	0.0648	0.0001	0.0032	0.0077	0.0169	0.1783
SERIOUS1	20,398	0.2299	0.4208	0	0	0	0	1
SERIOUS2	20,398	0.4418	0.4966	0	0	0	1	1
SERIOUS3	20,398	0.2456	0.4304	0	0	0	0	1
WLNMCUSD	20,398	12.433	2.4220	7.6544	10.6104	12.1786	14.1844	18.2018
WLNMR	20,398	4.6713	1.6369	0.6842	3.5914	4.6916	5.7474	8.3168
WVOL	20,398	0.0334	0.0997	0.0009	0.0075	0.0124	0.0269	0.4099
LOSS	20,398	0.2143	0.4104	0	0	0	0	1
WLEV	20,398	0.1376	0.2014	0.0000	0.0010	0.0121	0.2389	0.875

Table III-5 above shows the summary statistics obtained for each of the dependent and control variables used in the analysis. The Bid-ask spread is the annualized estimate obtained from the daily data obtained from Datasteam. The Realized returns are calculated by compounding the weekly returns obtained from datastream. The construction and measurement of the control variables is mentioned in more detail later on in the paper.

Table III-6 below shows the correlation matrix between the key variables used in the paper, including the dependent variables and the IFRS adoption variables.

Table III-6: Correlation Matrix.

Table III-6 shows the correlation matrix for the variables used in the analysis, including the dependent variables. The construction and measurement used for each variable in the matrix is described in further detail in Section 4.

	LNRW	IFRS	V	M	VM	UAI	SERIOUS1	SERIOUS2	SERIOUS3	WLNMCUSD	WLNMR	USGAAP	WVOL	LOSS	WLEV	ENF_EU
LNRW	1															
IFRS	0.062***	1														
V	0.077***	0.098***	1													
M	-0.071***	0.639***	-0.232***	1												
VM	0.125***	0.219***	-0.079***	-0.519***	1											
UAI	-0.055***	-0.032***	0.054***	-0.089***	0.058***	1										
SERIOUS1	-0.087***	0.053***	-0.037***	0.063***	-0.007	-0.130***	1									
SERIOUS2	-0.099***	0.099***	-0.057***	0.089***	0.021***	-0.140***	0.192***	1								
SERIOUS3	-0.162***	-0.018**	-0.036***	0.021***	-0.031***	0.006	0.168***	0.263***	1							
WLNMCUSD	-0.206***	0.012**	-0.034***	0.018**	0.018*	0.044***	0.215***	0.339***	0.577***	1						
WLNMR	-0.012	0.027***	-0.015**	0.027***	0.002	0.041**	0.005	-0.004	-0.001	0.0025***	1					
USGAAP	0.083***	-0.369***	-0.036***	-0.236***	-0.081***	0.019***	-0.021***	-0.025***	0.001	0.006	-0.015**	1				
WVOL	0.229***	-0.011*	0.043***	-0.052***	0.036***	-0.031***	-0.026***	-0.029***	-0.039***	-0.091***	-0.003	0.059***	1			
LOSS	0.031***	0.004	0.006	-0.009	0.014**	-0.016***	-0.011**	-0.008	-0.012**	-0.031***	-0.008	-0.002	-0.009	1		
WLEV	-0.012	0.011*	-0.003	0.018***	-0.011*	0.031***	0.003	0.009	0.009*	0.036***	-0.013**	-0.020***	-0.004	0.146***	1	
ENF_EU	-0.039***	-0.017**	-0.021***	0.031***	-0.018***	-0.293***	0.049***	0.057***	-0.016***	-0.045***	-0.008	-0.043***	-0.023***	0.007	-0.013**	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

3.1.6. Other Control Variables

We include industry, country, and year fixed effects in all the regression models, and hence control for differences in countries' adoption rates as well as time trends. We also check that the results are robust when we include Firm year and Industry dummies in the regressions and we cluster by firm. For the adoption variable, we include binary indicator variables to control for firms following US GAAP (Daske et al, 2013). We control for country differences by including the ΔENF_EU variable from Hail et al (2013).

We control for the Firm Size, Return Variability, Market Return, Loss, US GAAP, Leverage, and ENF_EU (Similar variables are also used by Daske et al 2013). Firm size is defined as the natural log of Market Value in USD obtained from DataStream/Worldscope. Market return is the annualized return on the local market index, which is meant to control for momentum based strategies. Return variability is calculated as the annualized standard deviation from the daily stock market return from DataStream. LOSS is a binomial variable which is coded 1 if the firm has reported a loss in the previous period and zero otherwise. Leverage is the fraction of Total Debt to Total firm assets. US GAAP is a binary variable equal to one if the firm year observation uses US GAAP (similar to Daske et al 2013).Finally, the ENF_EU variable is the variable obtained from Hail et al (2013), which is meant to control for any variation in enforcement changes.

A. Data

We obtain financial data from Worldscope, weekly prices, daily prices, and financial data from DataStream / Worldscope. The data is available for the 22 countries in our sample and relates to the time period January 2000 to December 2013. We include all common stocks, which were listed on the stock exchange (s) in each country during the sample period. A cross listed stock is included only in its home country sample. We include all firms that were operational during the period, that is, we include both 'dead' and 'alive' firms. This allows us to reduce the survivorship bias in the dataset.

Table III-7 below, shows the description for the variables used in the tests. The description for any additional variables used in the robustness tests are detailed in the respective robustness test section.

Table III-7: Control Variables used in the paper

Variable	Description/Source
SERIOUS	The three variables created by Daske et al(2013), which are meant to measure firm level financial reporting transparency.
LEV	Calculated as the ratio of total debt to the market value of equity. Source - Worldscope.
LNMCUSD	Natural log of the Market Value in USD (as used in Daske et al 2013). Used to control for the size of a company.Source- Datastream/Worldscope.
MR	Natural Log of the Return on the market. Used to control for the effect of momentum trading strategies. Source- DataStream.
US GAAP	US GAAP. Used to control for the effect of a company using US GAAP. Source-Datastream/Worldscope.
VOL	Return volatity. Calculated as the annualized variability of daily returns. Used to control for the effect of volatitity on trading behaviour. Source-Datastream/Worldscope.
LOSS	A variable to take into account a company making a loss in the prior period. Source-Datastream/Worldscope.
ENF_EU	Obtained from Hail et al (2013). Used to control for changes in enforcement around the time of IFRS adoption.

4. Univariate Analysis

We begin the analysis by examining the univariate results for our main variables of interest. From our Hypothesis above, we expect IFRS adoption, and Hofstede's (1980, 2001) UAI variable to have a positive (beneficial) impact on the liquidity and cost of equity of adopters.

Table III-8: Univariate Analysis

Group	Value (1)	Obs (1)	Value (2)	Obs (2)	(1)-(2)
UAI	-4.899	12,363	-5.086	8,035	**0.1866*** **
IFRS	-4.951	14,971	-5.034	5,427	**0.0083*** **
IFRS_UAI	-4.910	8,987	-5.023	11,411	**0.1127*** **
M	-5.078	11,603	-4.835	8,795	**-0.2428*** **
M_UAI	-5.138	6,251	-4.900	14,147	**-0.2379*** **
V	-4.347	548	-4.991	19,850	**0.6438*** **
V_UAI	-4.289	518	-4.991	19,880	**0.6955*** **
VM	-4.548	2,820	-5.042	17,577	**0.494*** **
VM_UAI	-4.411	2,288	-5.042	18,179	**0.6309*** **

IFRS is a binary indicator variable. IFRS_UAI is the variable created as a product of the IFRS variable and UAI. UAI is a score developed by Hofstede (2001). M is a binary variable equal to one if the firm adopts IFRS for the first time when adoption becomes mandatory. V is a binary variable equal to one if the firm adopts IFRS prior to it becoming mandatory.

VM is a binary variable equal to one if the firm had adopted IFRS before it became mandatory and continues to use IFRS after it becomes mandatory.

Table III-8 above shows the univariate results conducted on the dataset.

Consistent with our hypothesis, we find that a higher score for UAI is associated with an increase in the cost of equity. Consistent with Daske et al's (2013) findings, the univariate suggests that the IFRS variable is associated with a significant and positive effect on the cost of equity. This suggests that IFRS adoption leads to an increase in the cost of equity.

Moving on to the interaction of IFRS and UAI, we see that IFRS adoption and the interaction of UAI actually causes an increase in the cost of equity. On further analysis, we see that this result is being caused due to the voluntary and the VM group displaying a positive relationship, while the mandatory group suggests a negative relationship. Therefore, the cost of equity test suggests that the benefit of IFRS adoption and the influence of UAI is different depending on whether the firm is a voluntary, voluntary/mandatory, or mandatory adopter. The positive relationship for the cost of equity test is in line with results found by Daske et al (2013).

In order to further examine the results from our univariate analysis, we move on to our multivariate analysis below.

5. Analyses and Results of the Total sample period (2000-2013)

We begin the analysis by examining whether the cost of equity differed for IFRS adopters, and whether the heterogeneity in the economic benefits was influenced by the level of uncertainty avoidance (UAI) present in the country. The main prediction for this section is that the economic benefits from IFRS adoption should be greater for those firms that are located in higher UAI countries.

5.1. Analysis of IFRS adoption and UAI on capital market benefits

We begin the analysis by examining the influence of UAI on cost of Equity (Realized returns) between firms reporting using IFRS. In Table III-9, we estimate the empirical specification in Equation (1), and include Daske et al's (2013) SERIOUS adopter variables as additional control variables in subsequent equations. For each dependent variable, our first regression excludes IFRS as an explanatory variable, our second regression includes the IFRS variable as an additional explanatory variable, the third regression adds the interaction of UAI with IFRS alongside the main variables of interest (IFRS and UAI), while the fourth, fifth and sixth variables add each of the SERIOUS variables as an additional control variable. We expect the IFRS variable to be significant and negative for the cost of equity tests, while

we expect the UAI variable to be significant and positive, and finally, we expect the interaction term to be significant and negative.

Table III-9: Analysis of IFRS Adoption and UAI on cost of equity

VARIABLES	(1) LNRW	(2) LNRW	(3) LNRW	(4) LNRW	(5) LNRW	(6) LNRW
IFRS		0.2265***	0.2927***	0.2928***	0.2911***	0.2820***
		(6.3815)	(6.7290)	(6.7540)	(6.6976)	(6.4797)
UAI	0.2503***	0.2388***	0.3220***	0.2995***	0.3038***	0.3193***
	(9.7297)	(9.3094)	(6.7292)	(6.2677)	(6.3124)	(6.6940)
IFRS_UAI			-0.1134**	-0.1048**	-0.1063**	-0.1168**
			(-2.1457)	(-1.9874)	(-2.0109)	(-2.2157)
SERIOUS1				-0.1407***		
				(-5.1804)		
SERIOUS2					-0.0810***	
					(-3.3788)	
SERIOUS3						-0.1986***
						(-6.1412)
WLNMCUSD	-0.1197***	-0.1279***	-0.1270***	-0.1215***	-0.1206***	-0.1043***
	(-22.6829)	(-23.5775)	(-23.4704)	(-22.0819)	(-20.8369)	(-16.0448)
WLNMR	-0.0139**	-0.0142**	-0.0140**	-0.0138**	-0.0143**	-0.0145**
	(-2.3071)	(-2.3508)	(-2.3266)	(-2.2914)	(-2.3740)	(-2.4127)
USGAAP	0.6897***	0.8007***	0.7871***	0.7865***	0.7870***	0.7724***
	(9.1978)	(10.6385)	(10.4354)	(10.5078)	(10.4738)	(10.3014)
WVOL	2.1394***	2.1190***	2.1165***	2.1152***	2.1172***	2.1264***
	(7.6104)	(7.5681)	(7.5541)	(7.5553)	(7.5740)	(7.6374)
LOSS	0.0465*	0.0457*	0.0462*	0.0458*	0.0449*	0.0456*
	(1.8452)	(1.8137)	(1.8337)	(1.8210)	(1.7841)	(1.8124)
WLEV	-0.0266	-0.0252	-0.0250	-0.0249	-0.0229	-0.0247
	(-0.5410)	(-0.5135)	(-0.5092)	(-0.5082)	(-0.4672)	(-0.5028)
ENF_EU	-0.0266	-0.0356	-0.0382	-0.0400	-0.0380	-0.0588
	(-0.6068)	(-0.8080)	(-0.8672)	(-0.9099)	(-0.8641)	(-1.3277)
Constant	-3.4285***	-4.5446***	-4.6070***	-4.6436***	-4.6509***	-4.8531***
	(-28.1776)	(-37.3099)	(-37.2676)	(-37.6316)	(-37.3668)	(-37.3998)
Observations	20,398	20,398	20,398	20,398	20,398	20,398
R-squared	0.1272	0.1295	0.1298	0.1313	0.1304	0.1318
Year FE	YES	YES	YES	YES	YES	YES
IND FE	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES

IFRS is a binary indicator variable. IFRS_UAI is the variable created as a product of the IFRS variable and UAI. UAI is a score developed by Hofstede (2001). SERIOUS 1, 2 and 3 are the firm level transparency variables created by Daske et al (2013). NMCUSD is the natural log of Market Value of Equity in USD. RM is the annualized returns on the relevant index. US is an indicator variable to take into account financial statements prepared using US GAAP. Return VOL is the natural log of the calculated annualized volatility for the stock. LOSS is an indicator variable that is 1 if the firm had a net loss in the prior period. Leverage is the ratio of Total Debt to Book Value of Equity. ENF_EU is a variable obtained from Hail et al (2013) that controls for country level differences in regulatory enforcement changes. The coefficients have been normalised in order to aid in understanding. Control variables denoted with W have been winsorised at the 1% level. t-statistics in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Table III-9 above presents the results for the cost of equity test (LNBAS). The coefficients for IFRS are significant and positive in all the regressions, suggesting that the use of IFRS results in an increase in the cost of equity. This result is not in line with our expectation that IFRS use should lead to a reduction in the cost of equity, but the results are in line with Daske et al(2013), and suggest that IFRS adoption alone may not be a sufficient factor in reducing the cost of equity.

Moving on to the UAI variable, as expected, the variable is found to be significant and positive in all the regressions, suggesting that a higher level of UAI is generally associated with a higher cost of equity. This result is in line with our first hypothesis.

However, the IFRS_UAI variable as expected, was found to be significant and negative, which suggests that the use of IFRS and a higher UAI score interact to cause an improvement (reduction) in the cost of equity. This result is in line with our second hypothesis. However, if we examine the coefficients of the IFRS, UAI, and the interaction terms, it appears that IFRS adopters in higher UAI countries actually suffer from an increase in their cost of equity. This result is not in line with our expectations and will be examined in more detail below.

In terms of the control variables, the three SERIOUS variables are observed to be significant and negative as expected. The results therefore imply that financial reporting transparency, whether measured by reporting incentives (SERIOUS 1), improvement in accruals quality (SERIOUS 2), or increased analyst coverage (SERIOUS 3), all seem to indicate a reduction in the cost of equity. This result is consistent with our expectation and is in line with Daske et al (2013).

The proxy for market value of the firm (WLNMCUSD) was found to be significant and negative, suggesting that larger firms tend to enjoy a lower cost of equity This result is in line with previous literature (Daske et al 2013, Fu et al, 2012). The proxy for market momentum (WLNMR) is found to be negative and significant, suggesting that increased market returns results in a decrease in the cost of equity, the results are similar to those found by Daske et al(2008) and Daske et al(2013), when they use market variability as a proxy for market momentum. The indicator variable for firms using US GAAP was found to be significant and positive for, suggesting that the use of US GAAP results in an increase in the cost of equity. the results are not in line with Daske et al (2013), who do not find US GAAP to be significant. The WVOL variable was found to be significant and positive, suggesting that increased firm level return volatility results in an increase in the cost of equity. The LOSS variables were found to be significant and positive, suggesting that firms that have exhibited a loss in the prior period, tend to observe a higher cost of equity. The leverage variable was not found to be significant. Finally, the Hail et al (2013) enforcement variable was found to be negative, though not significant in all the tests.

5.2. Analysis of Mandatory, Voluntary, and Voluntary/Voluntary, and UAI on capital market benefits

In this section, we explore whether the heterogeneity in capital market benefits is driven by whether a firm is an early adopter (V), Voluntary/Mandatory(VM) or a mandatory adopter (MA). In Table III-10, we estimate the empirical specification in Equation (1) except that we bifurcate IFRS into V, VM and M adopters, and include Daske et al's (2013) SERIOUS adopter variables as additional control variables in subsequent equations. We expect the V,

VM and M adopters and the UAI variable to be significant and negative for the cost of equity tests, while we expect the UAI variable to be significant and positive, and finally, we expect the interaction terms of the adoption groups and UAI to be significant and negative.

Table III-10: Analysis of Mandatory versus Voluntary Adoption and UAI on cost of equity

VARIABLES	(1) LNRW	(2) LNRW	(3) LNRW	(4) LNRW	(5) LNRW	(6) LNRW
M		-0.0210	0.1661***	0.1681***	0.1651***	0.1592***
		(-0.5435)	(3.6965)	(3.7454)	(3.6743)	(3.5406)
V		0.8257***	0.5050*	0.5053*	0.5095*	0.4693*
		(10.7099)	(1.7874)	(1.8225)	(1.8061)	(1.6545)
VM		0.4505***	0.1559**	0.1542**	0.1549**	0.1322*
		(9.0449)	(2.2389)	(2.2204)	(2.2217)	(1.8981)
UAI	0.2503***	0.1635***	0.3482***	0.3254***	0.3299***	0.3459***
	(9.7297)	(6.4217)	(7.2627)	(6.7940)	(6.8358)	(7.2306)
M_UAI			-0.3562***	-0.3478***	-0.3490***	-0.3588***
			(-6.5451)	(-6.4027)	(-6.4108)	(-6.6044)
V_UAI			0.2864	0.2879	0.2848	0.3073
			(0.9799)	(1.0031)	(0.9761)	(1.0478)
VM_UAI			0.3085***	0.3228***	0.3166***	0.3149***
			(3.7099)	(3.8886)	(3.8053)	(3.7909)
SERIOUS1				-0.1406***		
				(-5.3183)		
SERIOUS2					-0.0809***	
					(-3.4433)	
SERIOUS3						-0.1769***
						(-5.6292)
WLNMCUSD	-0.1197***	-0.1224***	-0.1186***	-0.1132***	-0.1123***	-0.0984***
	(-22.6829)	(-23.0286)	(-22.5232)	(-21.2032)	(-19.9516)	(-15.5086)
WLNMR	-0.0139**	-0.0117**	-0.0106*	-0.0104*	-0.0109*	-0.0111*
	(-2.3071)	(-1.9646)	(-1.7887)	(-1.7537)	(-1.8371)	(-1.8719)
USGAAP	0.6897***	0.8101***	0.7789***	0.7785***	0.7789***	0.7658***
	(9.1978)	(10.4791)	(10.1273)	(10.1917)	(10.1652)	(10.0098)
WVOL	2.1394***	2.0422***	2.0133***	2.0120***	2.0140***	2.0231***
	(7.6104)	(7.5689)	(7.4791)	(7.4783)	(7.4987)	(7.5527)
LOSS	0.0465*	0.0446*	0.0455*	0.0451*	0.0442*	0.0450*
	(1.8452)	(1.7897)	(1.8304)	(1.8169)	(1.7798)	(1.8119)
WLEV	-0.0266	-0.0259	-0.0200	-0.0199	-0.0179	-0.0196
	(-0.5410)	(-0.5320)	(-0.4112)	(-0.4088)	(-0.3687)	(-0.4038)
ENF_EU	-0.0266	-0.0483	-0.0604	-0.0623	-0.0602	-0.0785*
	(-0.6068)	(-1.0656)	(-1.3636)	(-1.4143)	(-1.3632)	(-1.7594)
Constant	-3.4285***	-4.3677***	-4.5238***	-4.5377***	-4.5675***	-4.7374***
	(-28.1776)	(-34.1275)	(-34.3932)	(-34.5126)	(-34.5634)	(-34.6027)
Observations	20,398	20,397	20,397	20,397	20,397	20,397
R-squared	0.1272	0.1448	0.1503	0.1518	0.1509	0.1519
Year FE	YES	YES	YES	YES	YES	YES
IND FE	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES

M is a binary indicator variable equal to 1 if the firm adopted IFRS for the first time when it became mandatory. V is a binary variable equal to 1 if the firm adopted IFRS prior to it becoming mandatory. VM is equal to 1 if the firm was a V prior to 2005 and continues to use IFRS. M_UAI, V_UAI, and VM_UAI are the variables created as a product of the M, V, and VM variables and UAI. UAI is a score developed by Hofstede (2001). SERIOUS 1, 2 and 3 are the firm level transparency variables created by Daske et al (2013). LNMCUSD is the natural log of Market Value of Equity in USD. RM is the annualized returns on the relevant index. US is an indicator variable to take into account financial statements prepared using US GAAP. Return VOL is the natural log of the calculated annualized volatility for the stock. LOSS is an indicator variable that is 1 if the firm had a net loss in the prior period. Leverage is the ratio of Total Debt to Book Value of Equity. ENF_EU is a variable obtained from Hail et al (2013) that controls for country level differences in regulatory enforcement changes. The coefficients have been normalised in order to aid in understanding. Control variables denoted with W have been winsorised at the 1% level. t-statistics in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table III-10 above shows the analysis conducted on the M, VM, and M adopters. All three groups have coefficients that are significant and positive, suggesting that all three types of

adopters suffer from an increase in the cost of equity, though their coefficients are not of the same magnitude.

Moving on to the UAI variable, as in the above analysis, we find that the variable is significant and positive, suggesting that a higher UAI score is associated with a higher cost of equity. This result is in line with our first hypothesis.

Moving on to the three interaction terms, we find mixed results, we find that the V term is not significant though it is found to be positive, while the VM term is found to be positive and significant. Only the M term was found to be significant and negative. When we combine the M variable, with UAI and the M_UAI term, we find that mandatory adopters in higher UAI countries actually benefit from a decrease in their cost of equity. We find that voluntary and voluntary/mandatory adopters actually suffer from an increase in their cost of equity, and this increase is greater for higher UAI companies.

The above result is not in line with our expectations, however if we examine Table III-6, we can see the M group is positively related to firm size, the three Daske et al(2013) measures, to the market momentum measure, and to be negatively related to the volatility measure. This suggests that mandatory firms are larger, are more likely to be SERIOUS adopters, and that they are less likely to experience large volatility in their returns.

Compared to the M group, we find that both the V and VM firms tend to be smaller, less likely to be SERIOUS firms, and to be more likely to experience large volatility in their returns. This difference between the group's composition is likely causing the difference we observed above, given how these variables are expected to and do behave in our results above.

Moving on to the control variables, all the variables behave as in Table III-9 above and are consistent with prior literature and with our expectations.

6. Analyses and results by sub sample periods

We next examine whether earlier adopters were influenced by the level of uncertainty avoidance (UAI) present in the country. The main prediction in this section is that for early adoptions, that is, firms that voluntarily adopted prior to the 2005 EU wide adoption of IFRS, should benefit more from their IFRS decision and that this adoption should cause a larger effect for firms in higher UAI countries. We also expect that once market participants have a benchmark to gauge the IFRS adoption benefits against, that is, the EU wide adoption of IFRS, that irrespective of whether a firm is an early adopter or a mandatory adopter, that they should be treated identically by market participants.

In this section and the subsequent section, for brevity, we exclude the control variables from our reports in the tables. The first equation for each test is conducted using the SERIOUS1

variable, the second using the SERIOUS2 variable, and the third using the SERIOUS3 variable.

We also examine the results from the sub-period 2008-2013, which is used to examine whether the results are different for the period after the global recession.

Table III-11: Sub-period analysis. (Control variables not shown)

VARIABLES	(1) 2000-2007	(2) 2000-2007	(3) 2000-2007	(4) 2000-2004	(5) 2000-2004	(6) 2000-2004	(7) 2008-2013	(8) 2008-2013	(9) 2008-2013
M	0.1558**	0.1639**	0.1502**				0.1056	0.0942	0.0901
	(2.2255)	(2.3360)	(2.1510)				(0.8604)	(0.7687)	(0.7339)
V	0.4470	0.4577	0.3944	0.3933	0.4067	0.3261			
	(1.5701)	(1.5838)	(1.3534)	(1.3471)	(1.3583)	(1.0784)			
VM	0.1580	0.1847	0.1232				0.0524	0.0425	0.0335
	(1.0090)	(1.1745)	(0.7812)				(0.3881)	(0.3144)	(0.2476)
UAI	0.2111***	0.2134***	0.2354***	0.1164	0.1281*	0.1532**	0.3799***	0.3741***	0.3815***
	(3.6656)	(3.6289)	(4.1066)	(1.6203)	(1.7212)	(2.1492)	(2.9131)	(2.8580)	(2.9154)
M_UAI	-0.1503*	-0.1626**	-0.1652**				-0.4632***	-0.4545***	-0.4568***
	(-1.8568)	(-2.0071)	(-2.0493)				(-3.4727)	(-3.4049)	(-3.4181)
V_UAI	0.4102	0.4008	0.4324	0.4767	0.4640	0.5076			
	(1.3911)	(1.3399)	(1.4345)	(1.5732)	(1.4940)	(1.6215)			
VM_UAI	0.6352***	0.6057***	0.6175***				0.1176	0.1229	0.1251
	(3.7329)	(3.5501)	(3.6148)				(0.7792)	(0.8130)	(0.8271)
SERIOUS1	-0.1763***			-0.2874***			-0.0816**		
	(-4.1921)			(-4.2420)			(-2.3583)		
SERIOUS2		-0.1102***			-0.1414**			-0.0502	
		(-2.7285)			(-2.1968)			(-1.6419)	
SERIOUS3			-0.3058***			-0.3471***			-0.0535
			(-5.9035)			(-4.6838)			(-1.3501)
ENF_EU	-0.0229	-0.0277	-0.0600	-0.0865	-0.0930	-0.1090	-0.1217**	-0.1181**	-0.1220**
	(-0.3046)	(-0.3711)	(-0.8005)	(-0.7527)	(-0.8095)	(-0.9510)	(-2.2504)	(-2.1779)	(-2.2366)
Observations	7,542	7,542	7,542	3,718	3,718	3,718	10,077	10,077	10,077
R-squared	0.1808	0.1797	0.1833	0.2257	0.2227	0.2268	0.1301	0.1298	0.1297
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
IND FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES

M is a binary indicator variable equal to 1 if the firm adopted IFRS for the first time when it became mandatory. V is a binary variable equal to 1 if the firm adopted IFRS prior to it becoming mandatory. VM is equal to 1 if the firm was a V prior to 2005 and continues to use IFRS. M_UAI, V_UAI, and VM_UAI are the variables created as a product of the M, V, and VM variables and UAI. UAI is a score developed by Hofstede (2001). SERIOUS 1, 2 and 3 are the firm level transparency variables created by Daske et al (2013). LNMCUSD is the natural log of Market Value of Equity in USD. RM is the annualized returns on the relevant index. US is an indicator variable to take into account financial statements prepared using US GAAP. Return VOL is the natural log of the calculated annualized volatility for the stock. LOSS is an indicator variable that is 1 if the firm had a net loss in the prior period. Leverage is the ratio of Total Debt to Book Value of Equity. ENF_EU is a variable obtained from Hail et al (2013) that controls for country level differences in regulatory enforcement changes. The coefficients have been normalised in order to aid in understanding. Control variables denoted with W have been winsorised at the 1% level. t-statistics in parentheses: *** p<0.01, ** p<0.05, * p<0.1

6.1. Analysis and results for the 2000-2007 period

In this section, we explore whether the results are persistent or whether they are time specific. We conduct this examination by using a sub-sample of the data used in the main analysis. The subsample consists of the entire database of firms, but only takes into account the 2000-2007 period. This subsample period therefore ignores the global recession of 2008.

The results from this test should be treated with some caution. Since this sample ends in 2007, the results may not provide a complete picture of the influence of IFRS on the liquidity and cost of equity for the firms in question, given that the influence of the global recession is excluded. It may be the case that capital markets may only gradually be able to fully

internalize the transition to a new set of accounting standards, and that by excluding six years from the dataset, we might be excluding key information from the analysis.

We expect the V,VM, and M, and their interaction terms to be negative and significant for the three tests, while we expect the UAI variable to be significant and positive. Equations 1-3 in Table III-11 presents results from the OLS regressions with robust standard errors that are clustered by firm

We find only the M variable to be significant and positive, while we find the UAI variable to be significant and positive for all three tests in line with our expectations. We find the V_UAI variable to be insignificant but positive. We also find the VM_UAI variable to be significant and positive. Finally, we find the M_UAI variable to be significant and negative. Overall the results suggest that all three types of firms appear to exhibit an increase in their cost of equity, though it appears that M firms generally benefit slightly with a lower cost compared to the VM firms, however, all three types suffer compared to identical firms in lower UAI countries.

The control variables behave in almost identical manner to that observed above.

6.2. Analysis and results for Pre-EU IFRS adoption

In this section, we examine whether early (Voluntary) adopters were able to benefit more than mandatory or non-adopters prior to the mandatory adoption of IFRS by the EU on the 1st of January 2005. The main prediction for this sub-sample is that early adopters should benefit more than other groups of firms and this effect should be directly linked to the level of UAI present in the relevant country.

Equations 4-6 in Table III-11 above reports the results conducted on a sample encompassing the five year period 1st of January 2000 to 31st December 2004. This sub-sample excludes data from the 1st of January 2005 onwards, the date from which IFRS became mandatory for all EU listed entities. This test is meant to examine whether voluntary adopters exhibited different capital market outcomes compared to mandatory adopters during this particular time period, and whether firms benefited from their adoption decision.

As can be seen, there are no Mandatory or Voluntary/Mandatory adopters in this test. The coefficient of the V variable is insignificant, but positive.

Moving on to the UAI variable, we find that the variable is significant and positive, suggesting that a higher value for UAI leads to an increase in the cost of equity, which is consistent with our expectation.

Finally, as expected, in line with our previous results, we do not find the interaction term to be significant. Overall, the results suggest that voluntary adopters in higher UAI countries suffered an increase in the cost of equity compared to firms in lower UAI countries.

The control variables behave in a similar manner to that observed above previously.

6.3. Analysis and results for Post-EU IFRS adoption (2008-2013)

In this section we examine whether the economic benefits experienced by the two sets of firms were persistent or whether market participants treated the groups of firms as identical. The prediction is that following the EU mandate of compulsory IFRS adoption beginning in 2005, market participants had a benchmark against which they could gauge the potential costs and benefits from the adoption of IFRS. As a result, there should be a lower level of uncertainty attached to adoption post 2005, given that market participants have an expectation based on the previous experience of EU listed entities. As a result, we expect that both mandatory and voluntary/mandatory adopters in higher UAI countries should experience similar economic consequences from adoption.

Equations 7-9 in Table III-11 above, reports the results conducted on a sample encompassing the six year period 1st of January 2008 to 31st December 2013. This sub-sample includes data from the 1st of January 2008 onwards, i.e., we include observations that fall within the Global Recession of 2008. This test is meant to examine whether voluntary/mandatory exhibited different capital market outcomes compared to mandatory adopters, once IFRS became mandatory for all EU listed entities.

Unlike the main analysis, we observe that neither the M nor the VM coefficients are significant and positive, suggesting that during this time period, IFRS adoption by itself did not lead to an increase in the cost of equity.

As expected the UAI variable is significant and positive, which is in line with our predictions and earlier results.

Finally, in terms of the interaction effect, we only find the M group to be significant and negative. The coefficient for the interaction term for the M group is larger than the coefficient for the UAI variable, suggesting that during this time period, mandatory adopters in higher UAI countries actually benefited from a decrease in their cost of equity compared to identical firms in lower UAI countries.

The control variables behave as expected and are similar to those earlier.

The main prediction is that the influence of uncertainty avoidance (UAI), should be similar for both mandatory and voluntary/mandatory adopters once IFRS adoption became compulsory in the EU. We however do not find for this to be the case, we find that the VM group suffers from an increase in the cost of equity, while the M group appears to benefit from a decrease in its cost of equity.

The findings therefore are complementary to previous research that has found the quality and quantity of disclosure to be a means to signal quality and to influence capital market outcomes (Verrecchia 2001, Diamond & Verrecchia 1991, Diamond 1985).

7. Robustness Tests

In this section, we test the sensitivity and robustness of the results to various research design choices by substituting the key cross-country variable with competing variables used in prior research. For brevity, we only show the coefficient and t-statistics of the main variables of interest and exclude the statistics for the control variables from the tables. Unless stated otherwise, we estimate the regressions using the same models as in sections 5 and 6.

Table III-12: Robustness tests with CIFAR, Schwartz (HAR), and Hofstede

VARIABLES	(1) CIFAR	(2) CIFAR	(3) CIFAR	(4) HAR	(5) HAR	(6) HAR	(7) HOFSTEDE	(8) HOFSTEDE	(9) HOFSTEDE
M	0.1380***	0.1354***	0.1302***	0.1659***	0.1613***	0.1543***	0.6747***	0.6719***	0.6806***
	(3.1042)	(3.0427)	(2.9223)	(3.6624)	(3.5584)	(3.3999)	(3.6983)	(3.6751)	(3.7537)
V	0.3144	0.3175	0.2830	0.1699	0.1736	0.1626	1.2340**	1.2046**	1.0900**
	(1.2027)	(1.1950)	(1.0592)	(0.7063)	(0.7207)	(0.6796)	(2.4836)	(2.3370)	(2.1176)
VM	0.0846	0.0853	0.0653	0.1297*	0.1276*	0.1036	0.5467**	0.5572**	0.5642**
	(1.2040)	(1.2092)	(0.9266)	(1.8273)	(1.7966)	(1.4611)	(2.3707)	(2.4231)	(2.4534)
UAI	0.1427***	0.1489***	0.1622***				0.7524***	0.7556***	0.7703***
	(2.9783)	(3.0926)	(3.3901)				(14.3626)	(14.3023)	(14.6395)
PDI							-0.6727***	-0.6666***	-0.6627***
							(-11.5132)	(-11.4730)	(-11.4189)
IDV							0.6459***	0.6379***	0.6482***
							(4.1275)	(4.0655)	(4.1825)
MAS							0.2701***	0.2626***	0.2567***
							(4.7162)	(4.5922)	(4.4966)
SERIOUS1	-0.1286***			-0.1297***			-0.1793***		
	(-4.9104)			(-4.8887)			(-6.9866)		
SERIOUS2		-0.0637***			-0.0749***			-0.0891***	
		(-2.7299)			(-3.2299)			(-3.8764)	
SERIOUS3			-0.1580***			-0.1650***			-0.1445***
			(-5.0444)			(-5.2998)			(-4.6999)
M_UAI	-0.3501***	-0.3521***	-0.3601***				-0.5683***	-0.5702***	-0.5803***
	(-6.5286)	(-6.5502)	(-6.7144)				(-9.2640)	(-9.2701)	(-9.4354)
V_UAI	0.4035	0.4010	0.4203				-0.3967	-0.3893	-0.3762
	(1.4912)	(1.4595)	(1.5218)				(-1.0891)	(-1.0580)	(-1.0190)
VM_UAI	0.2884***	0.2816***	0.2811***				-0.0301	-0.0371	-0.0387
	(3.4691)	(3.3778)	(3.3805)				(-0.3595)	(-0.4421)	(-0.4612)
M_PDI							0.3825***	0.3804***	0.3794***
							(5.4094)	(5.3858)	(5.3723)
V_PDI							0.0101	-0.0112	-0.0042
							(0.0458)	(-0.0508)	(-0.0192)
VM_PDI							-0.4894**	-0.5080**	-0.5365**
							(-2.2649)	(-2.3623)	(-2.4962)
M_IDV							-0.4685***	-0.4701***	-0.4815***
							(-2.9446)	(-2.9478)	(-3.0534)
V_IDV							-0.7244*	-0.6945*	-0.6194
							(-1.8219)	(-1.6691)	(-1.4938)
M_MAS							-0.0418	-0.0416	-0.0441
							(-0.6625)	(-0.6605)	(-0.6989)
V_MAS							0.4384*	0.4403*	0.4565*
							(1.8296)	(1.8351)	(1.8951)
VM_MAS							0.1775**	0.1895**	0.1937**
							(2.0928)	(2.2343)	(2.2824)
ENF_EU	0.0255	0.0275	0.0107	-0.1103**	-0.1107**	-0.1318***	0.0343	0.0340	0.0156
	(0.5895)	(0.6345)	(0.2461)	(-2.5559)	(-2.5659)	(-3.0271)	(0.6754)	(0.6675)	(0.3045)
HAR				0.3767***	0.3817***	0.3884***			
				(7.8021)	(7.9185)	(8.0930)			
M_HAR				-0.3478***	-0.3459***	-0.3517***			
				(-6.3341)	(-6.2987)	(-6.4060)			
V_HAR				0.6716***	0.6686***	0.6640***			
				(2.6706)	(2.6539)	(2.6510)			
VM_HAR				0.3394***	0.3369***	0.3419***			
				(4.0414)	(4.0109)	(4.0778)			
ACC_STD	-0.3694***	-0.3699***	-0.3679***						
	(-13.0431)	(-13.0560)	(-13.0448)						
Observations	20,397	20,397	20,397	20,397	20,397	20,397	20,397	20,397	20,397
R-squared	0.1616	0.1607	0.1617	0.1547	0.1539	0.1548	0.1849	0.1832	0.1836
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
IND FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES

M is a binary indicator variable equal to 1 if the firm adopted IFRS for the first time when it became mandatory. V is a binary variable equal to 1 if the firm adopted IFRS prior to it becoming mandatory. VM is a binary variable equal to 1 if the firm was a V and continues to use IFRS. M_UAI, VM_UAI, and V_UAI are the variables created as a product of the M, VM, and V variables and UAI. CIFAR is the score obtained from CIFAR (1995). HAR is a score developed by Schwatz et al (2005). V_HAR, VM_HAR and M_HAR are the interaction term of M,V,VM and the HAR variable. UAI, PDI, IDV, and MAS are the scores developed by Hofstede (2001). V_UAI, VM_UAI, and M_UAI are the interaction term of V, VM, and M and UAI. V_PDI, VM_PDI, and M_PDI are the interaction terms of V,VM, and M with PDI. V_IDV, VM_IDV, and M_IDV are the interaction terms of V,VM and M and IDV. V_MAS, VM_MAS, and M_MAS are the interaction terms of V, VM and M and MAS. SERIOUS 1, 2 and 3 are the firm level transparency variables created by Daske et al (2013). LNMCUSD is the natural log of Market Value of Equity in USD. RM is the annualized returns on the relevant index. US is an indicator variable to take into account financial statements prepared using US GAAP. Return VOL is the natural log of the calculated annualized volatility for the stock. LOSS is an indicator variable that is 1 if the firm had a net loss in the prior period. Leverage is the ratio of Total Debt to Book Value of Equity. ENF_EU is a variable obtained from Hail et al (2013) that controls for country level differences in regulatory enforcement changes. The coefficients have been normalised in order to aid in understanding. Control variables denoted with W have been winsorised at the 1% level. t-statistics in parentheses:*** p<0.01, ** p<0.05, * p<0.1

7.1. Quality of Local Accounting Standards

In the first robustness check, we explore whether the results above are biased due to the historical quality of financial reporting standards of the sample countries. We use a survey compiled in 1995 by the Centre for International Financial Analysis and Research (CIFAR), this survey data has also been used previously used in related research (Fidrmuc & Jacob, 2010). The data used in the analysis should be interpreted with caution for two main reasons. First, as seen in Table III-4, the data is missing for 7 of the sample countries and as a result, we are using a sub-set of the sample used in the earlier analysis. Second, the data is historical and does not take into account any changes made to accounting standards from 1995 onwards.

We include the CIFAR dataset in order to examine whether the IFRS and UAI variables are still significant explanatory variables, once we include the historical quality of the financial standard of the relevant countries. The higher the score for the accounting standards variable, the better the existing local standards are meant to be in terms of quality and quantity of financial statement disclosures. We therefore expect that the higher the accounting standards score, the lower the cost of equity. We conduct two sets of tests to gauge the importance in the distinction between the two groups of IFRS adopters and whether this has a significant impact on the results. We partition the total IFRS observations into the Voluntary, Voluntary/Mandatory, and Mandatory groups as mentioned before, and incorporate the three indicator variables into the regressions for the tests. Similar to Daske et al (2013), we include the three SERIOUS variables as controls. We create a binary variable equal to 1 if the country's CIFAR score is above the median for the dataset, and 0 otherwise. Our main variables of interest are V, VM, M, UAI, the three SERIOUS variables, the CIFAR variable, and the interaction terms for these variables.

Equations 1-3 in Table III-12, shows the results when we add the CIFAR variable as an additional variable. Only the M coefficient was found to be significant and positive.

The UAI score is found to be significant and positive in line with our expectations. Also, as expected the CIFAR variable was found to be significant and negative, suggesting that a higher level of pre-existing accounting standards in a country implies that the country will benefit from a reduction in the cost of equity.

In terms of the interaction effect, the M group was found to exhibit a significant and negative term, with the implication that mandatory adopters in higher UAI countries appear to benefit from a decrease in their cost of equity. The result for the VM group was observed to be the opposite of that for the M group.

Overall, the results are in line with our earlier analysis and suggests that mandatory adopters in higher UAI countries appear to benefit from a decrease in their cost of equity, while V and VM adopters appear to suffer from an increase in the cost of equity.

As mentioned above, we need to be cautious with the results from Table III-12 because of the incomplete coverage of the data and the historical nature of the data.

7.2. Schwartz's Cultural Dimensions

The next robustness test uses Schwartz's (2005) cultural dimensions. Harmony relates to the level to which individuals are content with the natural and social environment they find themselves in and where they seek to protect the existing environment, rather than attempt to change it. The Schwartz cultural data is not complete and there is only sufficient information for 19 out of the 22 countries of the sample, as shown in Table III-3 above. For the purpose of this analysis, we replace the UAI and the interaction variables of UAI, with a variable for Harmony (HAR).

In terms of the expected interaction of Schwartz's cultural variable with the liquidity and Cost of Equity tests, we expect the Harmony variable to influence the results in a similar fashion to UAI. The harmony dimension measures the degree to which society values the status quo and takes precautions against changing the environment, hence, the influence of this variable should be very similar to that of UAI, given that UAI measures the degree to which individuals in society are intolerant towards change. Similar to Hofstede's UAI variable, we expect that in terms of the results, the Harmony variable should have a beneficial influence on the cost of equity for adopters.

In equations 4-6 in Table III-12 we find that only the M and VM groups observe a significant and positive relationship, and the V group is observed to not be significant.

Unsurprisingly, we find that once we replace Hofstede's (2001) Uncertainty Avoidance Index (UAI) with Schwartz's proxy for uncertainty, we find similar results to those found in the main analysis, that is, we find the HAR variable to be significant and positive, suggesting that a higher score for HAR implies an increase in the cost of equity.

We find the interaction terms to be mixed. We find the variable to be significant and negative for the M group, but to be significant and positive for the VM and V groups, suggesting that compared to the V and VM groups, M groups in higher UAI countries observe a decrease in their cost of equity.

Overall, when we replace Hofstede's (2001) UAI variable with Schwartz's et al (2005) HAR variable, we find results that are similar to those find in the main analysis for the HAR variable, which is meant to proxy UAI.

7.3. Hofstede's Cultural Dimensions

We next examine the four cultural dimensions introduced by Hofstede (2001). These include Uncertainty Avoidance Index (UAI), Power Distance Index (PDI), Individualism (IDV) and Masculinity (MAS). The Power distance index (PDI) is constructed in order to measure the degree to which the less powerful members of society within a given country accept the unequal distribution of power amongst individuals. Where, a higher score for power distance implies that individuals accept the status quo of society and accept the unequal distribution of power. The Individualism (IDV) score is constructed in order to measure the degree to which individuals in a country are geared towards the actualisation of their own self-interest and goals, at times at the expense of the wider social goals and interests. Where, a higher score implies that individuals are more geared towards achieving their own interests and goals, while a lower score implies that individuals are more integrated into achieving the interests and goals of society. Masculinity (MAS) is constructed in order to measure the degree to which societies as a whole are more competitive, assertive and tough. Where, a higher score implies that society as a whole is more competitive and assertive while a lower score implies that the society is less competitive. We have already mentioned Uncertainty Avoidance before.

For the purpose of this test, we add the other three cultural dimensions to the existing UAI dimension in equation (1), and show the interaction terms of the three additional variables in the equation. The results from the tests are reported in equations 7-9 in Table III-12 above. We find the coefficients of all adoption groups to be significant and positive as previously observed above.

The UAI variable as before, is found to be significant and positive for the tests, which is in line with our expectation. The PDI variable is found to be significant and negative, while the IDV and MAS variables are found to be significant and positive.

However, the addition of the three Hofstede (1980,2001) variables does not change the significant or direction of either the UAI, or the interaction terms, which behave as before, that is, the term associated with M is significant and negative, while the terms associated with V and VM were not found to be significant. The results, as before suggest that

mandatory adoperts in higher UAI countries tend to experience a reduction in their cost of equity.

However, the other cultural variables appear to give inconsistent results compared to that found for the UAI variable. Only the UAI variable was found to give robust and consistent results when examined and the other variables when individually found to not give consistent results in terms of direction and magnitude, when compared to the UAI variable presented in the paper.

We therefore can conclude that changing the research design by incorporating all four of the cultural dimensions is found to be unsuitable, and that this test proves that our earlier research design of only including the UAI variable is both economically and statistically robust.

The results are not surprising given that earlier research has found that the only robust cultural dimension in empirical research was UAI (Salter & Niswander, 1995; Sudarwan & Fogarty, 1996). Saudagaran and Meek (1997) argue that this result arises because the UAI variable dominates the other cultural dimensions due to UAI acting as a 'summary index for the other three cultural dimensions' (1997,p 130). So, in essence the above results are being caused by multicollinearity between the four dimensions, which is primarily being driven by the high level of correlation that exists between the four variables (Salter & Niswander,1995).

Table III-13: Robustness checks Religion, GLOBE, and LaPORTA.

VARIABLES	(1) RELIGION	(2) RELIGION	(3) RELIGION	(4) GLOBE	(5) GLOBE	(6) GLOBE	(7) LAPORTA	(8) LAPORTA	(9) LAPORTA
M	0.4200***	0.4122***	0.3982***	0.0749*	0.0714*	0.0611	-0.0290	-0.0360	-0.0543
	(4.0214)	(3.9563)	(3.8039)	(1.9521)	(1.8587)	(1.5890)	(-0.4977)	(-0.6183)	(-0.9323)
V	0.6375	0.6376	0.6672	0.4597***	0.4561***	0.4434***	0.3475	0.3307	0.3093
	(1.3912)	(1.3993)	(1.4524)	(2.9417)	(2.8989)	(2.8483)	(1.5937)	(1.4802)	(1.4125)
VM	0.5426***	0.5508***	0.5059***	0.1367**	0.1396**	0.1142**	0.0442	0.0481	0.0155
	(2.9669)	(3.0386)	(2.7711)	(2.3527)	(2.4115)	(1.9658)	(0.3728)	(0.4020)	(0.1294)
ANTISD							0.0876	0.0693	0.0614
							(1.5628)	(1.2360)	(1.1008)
DISCLOSE							0.6957***	0.6880***	0.6954***
							(11.5649)	(11.4400)	(11.6164)
SERIOUS1	-0.1929***			-0.1646***			-0.1515***		
	(-7.2366)			(-6.5470)			(-5.9137)		
SERIOUS2		-0.1430***			-0.0923***			-0.0620***	
		(-6.0958)			(-4.0674)			(-2.6959)	
SERIOUS3			-0.1969***			-0.1989***			-0.1928***
			(-6.2632)			(-6.3355)			(-6.1799)
M_ANTISD							0.1634**	0.1670***	0.1795***
							(2.5562)	(2.6092)	(2.8069)
V_ANTISD							-0.0667	-0.0306	-0.0185
							(-0.2280)	(-0.1031)	(-0.0631)
VM_ANTISD							0.0223	0.0280	0.0450
							(0.1715)	(0.2145)	(0.3443)
M_DISCLOSE							-0.1971***	-0.1946***	-0.1898***
							(-2.9390)	(-2.9019)	(-2.8347)
V_DISCLOSE							0.3180	0.3367	0.3350
							(1.3618)	(1.4113)	(1.4299)
VM_DISCLOSE							0.3286**	0.3149**	0.3187**
							(2.5749)	(2.4494)	(2.4725)
GUAI				0.8613***	0.8615***	0.8714***			
				(17.5571)	(17.5441)	(17.7894)			
M_GUAI				-0.2807***	-0.2836***	-0.2906***			
				(-4.9282)	(-4.9700)	(-5.0966)			
V_GUAI				0.0294	0.0374	0.0270			
				(0.1677)	(0.2120)	(0.1543)			
VM_GUAI				0.0691	0.0588	0.0581			
				(0.8910)	(0.7596)	(0.7493)			
ENF_EU	-0.2361***	-0.2362***	-0.2652***	-0.4681***	-0.4666***	-0.4947***	-0.3476***	-0.3494***	-0.3768***
	(-4.7823)	(-4.8133)	(-5.3540)	(-9.4819)	(-9.4812)	(-9.9636)	(-7.5465)	(-7.5848)	(-8.1379)
CATH	0.0026**	0.0027**	0.0030**						
	(2.1335)	(2.2354)	(2.4668)						
PROS	0.0089***	0.0091***	0.0091***						
	(4.7920)	(4.9457)	(4.9064)						
ORTH	-0.0050**	-0.0048**	-0.0046**						
	(-2.3848)	(-2.3214)	(-2.2413)						
M_CATH	-0.0056***	-0.0056***	-0.0057***						
	(-4.1819)	(-4.1453)	(-4.2202)						
V_CATH	-0.0014	-0.0015	-0.0021						
	(-0.2242)	(-0.2488)	(-0.3397)						
VM_CATH	-0.0021	-0.0022	-0.0020						
	(-0.8320)	(-0.8940)	(-0.8190)						
M_PROS	-0.0080***	-0.0080***	-0.0079***						
	(-4.0075)	(-4.0162)	(-3.9233)						
V_PROS	0.0077	0.0080	0.0073						
	(1.0565)	(1.0981)	(0.9970)						
VM_PROS	-0.0005	-0.0007	-0.0002						
	(-0.1380)	(-0.2177)	(-0.0691)						
M_ORTH	0.0011	0.0011	0.0012						
	(0.5116)	(0.5274)	(0.5944)						
V_ORTH	0.0257***	0.0261***	0.0248***						
	(2.7364)	(2.8103)	(2.6210)						
VM_ORTH	0.0070*	0.0068*	0.0075*						
	(1.6961)	(1.6862)	(1.8712)						
Constant	-4.6829***	-4.7504***	-4.9055***	-4.6239***	-4.6545***	-4.8371***	-4.7840***	-4.7820***	-4.9765***
	(-29.5356)	(-29.9007)	(-29.8259)	(-36.2982)	(-36.2684)	(-36.2699)	(-35.9923)	(-35.7164)	(-36.0042)
Observations	20,397	20,397	20,397	20,397	20,397	20,397	20,397	20,397	20,397
R-squared	0.1553	0.1544	0.1545	0.1900	0.1888	0.1900	0.1770	0.1756	0.1772
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
IND FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES

M is a binary indicator variable equal to 1 if the firm adopted IFRS for the first time when it became mandatory. V is a binary variable equal to 1 if the firm adopted IFRS prior to it becoming mandatory. VM is a binary variable equal to 1 if the firm was a V and continues to use IFRS. CATH, PROS, and ORTH are the percentage of religious groups obtained from the CIA World Fact Book. V_CATH, VM_CATH, and M_CATH are the interaction terms of V, VM and M with CATH. V_PROS, VM_PROS, and M_PROS are the interaction terms of V,VM, and M with PROS. V_ORTH, VM_ORTH, and M_ORTH are the interaction terms of V,VM, and M with ORTH. GUAI is the UAI index created by the GLOBE network. V_GUAI, VM_GUAI, and M_GAUI are the interaction terms of V, VM and M with GAUI. ANTISD and DIS are the two variables introduced by La Porta et al (2006). V_ANTISD, VM_ANTISD, and M_ANTISD are the interaction terms of V, VM and M with ANTISD. V_DISCLOSE, VM_ DISCLOSE, and M_ DISCLOSE are the

interaction terms of V, VM and M with DISCLOSE.SERIOUS 1, 2 and 3 are the firm level transparency variables created by Daske et al (2013). LNMCUSD is the natural log of Market Value of Equity in USD. RM is the annualized returns on the relevant index. US is an indicator variable to take into account financial statements prepared using US GAAP. Return VOL is the natural log of the calculated annualized volatility for the stock. LOSS is an indicator variable that is 1 if the firm had a net loss in the prior period. Leverage is the ratio of Total Debt to Book Value of Equity. ENF_EU is a variable obtained from Hail et al (2013) that controls for country level differences in regulatory enforcement changes. The coefficients have been normalised in order to aid in understanding. Control variables denoted with W have been winsorised at the 1% level. t-statistics in parentheses: *** p<0.01, ** p<0.05, * p<0.1

7.4. Religious Demographics

We next examine whether Religion has an influence on the benefits of IFRS adoption on the cost of equity. We obtain the data for the 22 countries from the CIA World Fact book. We limit ourselves to three different categories of religion. The classifications are Catholic, Protestant, and Orthodox.

Prior research (La porta et al, 1999a,Kumar 2011) finds that different religious demographics are able to exert different influences on capital markets. La Porta et al (1999a) find that Catholics and Muslim religious populations are associated with an inferior level of government performance. Kumar et al (2011) find that higher Catholic dominated areas exhibit a stronger propensity to hold lottery type stocks, have more firms with employee stock option plans, and have higher incidences of the initial day returns after an IPO to be greater.

We hypothesize that the Catholic variable will be more closely associated with the UAI variable. The expectation arises due to prior research that finds that this religious group is associated closely with maintaining the status quo of society and being unwilling and slow to change the social and economic environment when faced with changing circumstances (La Porta et al, 1999a).

For the purpose of this test, we replace the UAI variable in equation (1) with the three religious categories and create corresponding interaction terms for the variables and the two groups of adopters. The results from the tests are reported in equations 1-3 in Table III-13 above.

As in the main analysis, the M and VM groups have positive and significant coefficients, while the V group was not found to be significant.

In terms of the religious groups, we find that all religious groups appear to be significant, but only the CATH and PROS groups were found to be significant and positive, while the ORTH group was found to be significant and negative. The results for the CATH group is in line with our expectations, but the results were the PROS group are not in line with our expectations.

In terms of the interaction terms, we find only the terms related to the M group to be significant and negative, suggesting that mandatory adopters exhibited a decrease in only the CATH dominated countries. The V group associated was found to be significant and positive, suggesting that voluntary adopters faced a higher cost of equity. However, this should be treated with some scepticism, given that the ORTH group is largely driven by one country (Greece).

The three SERIOUS and the ENF_EU variables behave as expected, that is, improved financial reporting transparency and a higher degree of regulatory enforcement leads to a reduction in the cost of equity.

To summarize, when we use religious demographics to examine the cost of equity benefits, we find some evidence to support the notion that certain types of religious orientation influences liquidity and the cost of equity. We find results for the Catholic group that mirrors the results found for the UAI group in our main analysis. Our results are consistent with our expectation for the Catholic group. However, there is some evidence to suggest that certain religious groups appear to influence the economic benefits in a similar manner as the UAI measure and the results are complimentary to those found in earlier studies referenced above.

7.5. Globe Data

We next examine whether our results are robust to data obtained from GLOBE. The Global Leadership and Organisational Behaviour Effectiveness (GLOBE) is a cross cultural research effect that involves researchers based in 62 countries across the world. The international team collected data from 17,300 middle managers in 951 firms. The GLOBE research effort was borne out of a concern at possible biases being incorporated in earlier cultural findings such as Hofstede (2001) and Schwartz (2005), due to the reliance on a single firm, or investigations conducted by a single team. In order to reduce the level of 'response bias' in the existing culture datasets, the GLOBE research effort has re-examined and updated existing cultural dimensions of Hofstede and other researchers.

For the purpose of this test, we will be using a variable developed by GLOBE; Uncertainty Avoidance (GUAI). The GUAI is the GLOBE constructed version of Hofstede's UAI used in our earlier analysis. In essence, this variable is meant to be more robust and free of bias (response and selection bias), compared to Hofstede's UAI. Prior research (Baskerville , 2003) has criticised the construction of Hofstede's dimensions and argue that the variable is biased due to the method of construction and due to the reliance on a single firm (IBM). This

test is meant to examine whether an almost identical variable, constructed in a more robust fashion, is able to show similar results to the one obtained previously.

The GLOBE data is not complete, and we only have data for 17 out of the 22 countries in the sample (Table III-4). We replace the UAI variable in equation (1) with the variable obtained from GLOBE and run the regression in the same manner as in section 5. The results of the test are shown in equations 4-6 in Table III-13 above.

We find the coefficients of all three adopters to be significant and positive, suggesting that IFRS adoption leads to an increase in the cost of equity.

The GUAI, our proxy for the UAI used in the main analysis was found to be significant and positive as expected, suggesting that a higher score for the GUAI results in an increase in the cost of equity.

Finally, in terms of the interaction terms, only the terms associated with the M group were found to be significant and negative, suggesting that only the M group benefits from a decrease in the cost of equity.

The SERIOUS and the ENF_EU variables behave as expected, that is, improved financial reporting transparency and a higher degree of regulatory enforcement both lead to a decrease in the cost of equity.

Overall, the results appear to give some support to our results from the main analysis, and suggest that there appears to be some cost of equity benefits for mandatory adopters in higher GUAI countries.

7.6. La-Porta's Country level factors

The final robustness test uses two variables introduced by La Porta et al (2006). The first variable is the Anti- Self-Dealing index (ANTI-SD) and measures the intensity of regulation of self-dealing by managers along a number of dimensions, covering both public and private enforcement mechanisms. The second variable Disclose, is an index meant to measure the level of existing disclosure requirements for shareholders and other capital market participants.

The Anti-SD and Disclose variables are constructed to measure the level of protection offered, and the level of disclosure made by a firm respectively. We expect the Anti-SD variable to be directly (adversely) related to the benefits, given that this variable measures the intensity of existing regulations protecting market participants from firm managers. IFRS

adoption should improve the level and quality of information available to these market participants, and thereby a country with a higher ANTI-SD score should only have a marginal benefit from IFRS adoption.

The Disclose variable is expected to have a negative (beneficial) relationship with the cost of equity benefits. If a country has a higher disclose score, it implies that the country has a higher level of existing regulation that enforces disclosures should be made by the firm. The introduction of IFRS may therefore be beneficial for market participants.

However, the Dataset for the two variables is not complete. We only have data for 21 countries for both the Anti-SD variable and the Disclose variable (as seen in Table III-4). For the purpose of this test, we replace the UAI variable in equation (1) with the two La Porta variables and generate the resulting interaction terms. The results of the tests are shown in equations 7-9 in Table III-13 above.

We do not find any of the three adopter groups to be significant. We also do not find the ANTISD variable to be significant. However, as expected, we find the DISCLOSE variable to be significant and positive, suggesting that a higher score for DISCLOSE leads to an increase in the cost of equity.

We only find the interaction terms associated with the M group to be significant. However, in line with our expectation, we find that a higher score for ANTISD interacts to lead to an increase in the cost of equity, whereas a higher score for DISCLOSE interacts to lead to a decrease in the cost of equity.

The control variables for the three SERIOUS and the ENF_EU variables behave as expected.

The results generally suggest that our proxy for uncertainty avoidance (DISCLOSE) appears to suggest that there is some explanatory power in determining the heterogeneity in the cost of equity benefits observed by firms.

8. Conclusion

This paper examines the influence of uncertainty avoidance on the cost of equity benefits associated with IFRS adoption around the world. We focus on firm-level heterogeneity in the consequences, recognising that firms can differ in their motivations and the influence of uncertainty avoidance (UAI) on IFRS. Some firms may adopt new IFRS standards as a means to signal their quality, others may adopt without making any material changes to their reporting policies, while some may adopt IFRS as part of a broader strategy to improve their commitment to greater capital market transparency. The possibility of such differences

implies significant heterogeneity in the economic consequences around IFRS adoption due to selection effects.

Our main prediction for the influence of uncertainty avoidance on the cost of equity benefit derived from IFRS adoption is that the prevailing cultural attitudes towards uncertainty in higher UAI countries, would result in a higher marginal benefit to investors compared to lower UAI countries. We predict this hypothesis due to our expectation that the pre-existing cultural norms in higher UAI countries would pre-dispose these countries to adopt accounting standards that would provide the disclosure of a lower quality or quantity of information compared to that offered by IFRS adoption. Hence, these types of countries should benefit to a greater degree from IFRS adoption compared to lower UAI countries.

We predict that Voluntary adopters would benefit more in higher UAI countries than their counterparts and compared to mandatory and voluntary/mandatory adopters due to the ability to signal their quality by going counter to the cultural norms of society.

To show the existence of such effects, we create and use two sets of variables in the paper. The first set of variables takes into account whether the firm observation uses IFRS, and in later analysis, whether the observation contains a Mandatory, Voluntary/Mandatory, or a Voluntary adopter. The second set of variables takes into account the influence of uncertainty avoidance on the firm's adoption decision, and the resulting economic consequences (UAI). We examine the economic consequences of uncertainty avoidance on IFRS adoption for mandatory, voluntary/mandatory, and voluntary adoption firms in a large EU based panel dataset from 2000-2013.

We find that for IFRS adopters as a whole, the UAI variable has a significant positive relationship on cost of equity. That is, higher UAI implies a higher cost of equity. These results are consistent with our hypothesis. We further find that for the cost of equity, the three SERIOUS variables as introduced by Daske et al (2013), are significant and negative, implying that improved financial reporting transparency results in a decrease in the cost of equity. In terms of the interaction effect, in line with our hypothesis, we find that the use of IFRS and a higher UAI score for the country interact to lead to a reduction in the cost of equity, that is, the interaction terms are significant and negative, however, we find that the benefit from the interaction term is not sufficient to overcome the effect of the UAI variable.

Examining the IFRS group by mandatory, voluntary, and voluntary/mandatory adopters suggests the effect of IFRS adoption and UAI are not uniform, but rather that mandatory adopters in higher UAI countries appear to benefit more than firms in lower UAI countries

or any other type of IFRS adopter. We find that voluntary/mandatory firms tend to suffer from an increase in their cost of equity.

We check the robustness of the results and replace the UAI variable with several competing cross-country variables used in prior literature. We find that all the other competing cross-country variables previously used generally appear to suggest that uncertainty avoidance (or a proxy of UAI), may be able to partly explain the cross-country differences in the economic benefits from IFRS adoption. Therefore, the robustness tests provide additional support to our conclusions from the main analysis.

The study also contributes to the literature on the role of the influence of uncertainty avoidance on IFRS adoptions and the resulting capital market outcomes. It highlights the role of cross-country differences in uncertainty avoidance, and how these differences can be used to explain part of the heterogeneity in capital market outcomes across firms and countries. We present evidence that suggests that the level of uncertainty avoidance can influence the economic benefits that firms can accrue from the adoption of IFRS. Also, unlike other existing studies on IFRS, we do not focus on just cross sectional data, but we also include time series data. This allows us to examine whether the differences between countries and firms are persistent or time specific. This is important as there may be incorrect inferences drawn, if we only focused on a specific time period.

Finally, we caution the reader that the results should not be interpreted as implying that uncertainty avoidance is the primarily driver for the cross-country heterogeneity in cost of equity, but rather a factor that is able to explain part of the difference in the results. We do not claim that managers were able to benefit from using the level of uncertainty avoidance in their respective countries. But rather the paper claims that managers *could* have benefited from the level of uncertainty avoidance. While we show that uncertainty avoidance plays an important role for the sign and magnitude of the market reactions from IFRS adoption, the tests are not designed to analyse the relative contribution of standards and incentives.

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V. Paper 2: 'Accounting Choice and Debt design'

1. Introduction

In the second half of 2007, the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) introduced similar accounting standards to cater towards 'Fair Value' accounting for assets and liabilities. Several papers have been published in recent years that examine the influence of Fair Value accounting on volatility of earnings (Fiechter, 2011), illiquid and long lived assets (Platin et al, 2008), and the inclusion of financial covenants (Demerjian, 2011). Our paper is an attempt to introduce a theoretical model that examines the influence of Fair Value accounting (FVA) compared to a Historical cost accounting (HCA) based model.

In Historical Cost accounting, assets are recorded at historical cost, which normally equals the fair value at the time the assets were originally bought. Historical cost of an asset is adjusted for amortization and impairments, but any asset value increases are only recorded if the asset is sold. When asset values decline and impairment is not restricted, fair value and historical cost accounting should be consistent. However, in practise, the impairment test differs across assets. Furthermore, whether or not the value of an impaired asset is written down and the loss is recognised in the income statement depends on the asset in question and whether the impairment is deemed as being not 'temporary' (Laux and Leuz, 2010).

FVA, also referred to as "Marked-to-market", is an accounting regime wherein the firm has to periodically revalue its assets and liabilities to match the securities to their observable market values (Level 1), or to use observable market values of a similar type of security (Level 2), or to provide observable valuation inputs for securities that do not have verifiable market values (Level 3). Under a FVA regime, the firm will be required to revalue its assets and liabilities on each reporting date, and therefore, disclose any gains or losses due to the revaluation in the financial statements.[10]

Managers may disclose information to outsiders via two mechanisms; they can either 'commit' or 'voluntarily' disclose. When a firm commits to disclose information to outsiders, this is an ex ante decision made by the manager to disclose regardless of the observed outcome. When a manager voluntarily discloses information, this is an ex post decision to disclose once the outcome has been observed. FVA is a commitment made by managers, whereas, any revaluation under Historical Cost would be a voluntary disclosure.

[10] The exact disclosure of the gain/loss will differ depending on whether the security is classified as "Trading securities", "Available for Sale", or "Held-to-Maturity".

The traditional view on debt covenants as stated in Jensen and Meckling (1976) suggests that covenants are meant to control agency problems by restricting managerial activities that may expropriate wealth from debt holders. In practise, covenants are constructed using a variety of accounting ratios (Leftwich, 1983, Dichev and Skinner, 2002). However, little theoretical or empirical work exists on the influence of fair value accounting on the construction of debt covenants, the strictness of the covenants, and the cost of debt.

Our paper examines the design and renegotiation of covenants in debt contracts under asymmetric information and extends the model introduced by Garleanu and Zwiebel (2009). In particular, we assume that the choice of accounting regime, that is, whether the firm uses HCA or FVA, influences the lender's expectation of the potential wealth transfer (x), which is a reduced-form agency cost. In the model future investments are efficient in some states but also result in a transfer from the Lender to the Entrepreneur. The model has symmetric information concerning the efficiency of the investments, however, the firm is better informed about any potential transfers compared to the lender. Compared to Garleanu and Zwiebel (2009), we introduce a world in which the Lender will bear different costs and observe different information sets based on the accounting policy the Entrepreneur follows. Under our base case scenario, we assume that there are two types of firms, FVA or HCA types, and we assume that information acquisition differs under the two different accounting regimes. Under the FVA regime, the Lender obtains the true realisation of the transfer value prior to the investment being made. However, under the HCA regime, the lender has to acquire this information at a cost. The base model in our paper assumes that the use of FVA results in the acquisition of information that is unbiased, timely, and easily verifiable, therefore, it could be thought of as relating to the use of the Level 1 FVA classification as Liao et al (2013), Ryan (2008), and Demerjian et al (2014) have found that the Level 1, compared to the Level 2 and 3 classifications, discloses timely information that is easier to verify and confirm.

However, against the change in the information set under the two broad accounting regimes, we also incorporate differences in account preparation costs and information acquisition costs. We assume that the use of FVA results in a marginal increase in the cost (K) of preparing the financial statements for the firm, whereas, under the HCA regime, the lender is required to spend (C) in order to acquire the true realisation of the wealth transfer. We simplify the assumptions and state in our paper that the marginal cost of preparing the information is equal to the marginal cost of acquiring the information. Therefore, our model differs from Garleanu and Zwiebel (2009) in that we introduce a further layer of costs of

information preparation and acquisition that are either borne entirely by the lender or by the firm depending on the accounting regime being followed.

Given the above setting, we show that the presence of asymmetric information between the entrepreneur and the lender, and the two different accounting regimes leads to the allocation of a greater decision rights (covenants) ex ante to the more uniformed party, which is the lender facing a HCA regime, then would be the case under symmetric information.

The model also suggests that firms that use FVA should be rewarded ex ante by the lender via requiring a lower yield on the debt contracts.

We subsequently relax some of our assumptions concerning the accounting regimes, in particular, we relax the assumption concerning the ability of the HCA firm to engage in ex post revaluation and information sharing, and we are able to show that such a setting would result in a reduction in the number of ex ante covenants given to the lender than would be the case under a HCA regime, and that the cost of debt should be lower than would be the case under the HCA regime case.

We further extend the model by assuming a scenario in which the firm uses a method of FVA that results in 'noise' being introduced into the information set, that is, we try to model how the level 2 and level 3 classifications are expected to influence the design of loan contracts. We find that compared to our base case model (Level 1), the extension results in an increase in the number of ex ante covenants given to the lender, and a higher cost of debt demanded by the lender.

We test these predictions in the third chapter, wherein we obtain a sample of private US loan data from the LPC/DealScan loan database, and are able to find that the Level 1 classification results in a reduction in the number of balance sheet covenants, and a reduction in the initial yield spread.

Our paper compliments existing literature by incorporating the influence of accounting choice on contract design and renegotiation. In particular, the paper is the first of its type that examines the influence of FVA on debt covenants, initial yield and renegotiations.

This paper is structured out as follows. Section 2 presents the related literature. Section 3 introduces the model. Section 4 discusses the equilibrium of the model. Section 5 presents two extensions to the base model. Section 6 examines the empirical predictions. Section 7 concludes.

2. Related Literature

In this section, we highlight some of the existing literature surrounding covenants, the use of accounting information in debt design, and recent literature on 'Conservatism' and FVA.

The Costly Contracting Hypothesis (CCH), as articulated by Jensen and Meckling (1976), views the firm as a centre of contracts made between the firm and its various stakeholders. Under the CCH theory, managers/insiders will, at times, pursue strategies that benefit themselves at the expense of outsiders. Outside investors will anticipate the potential for wealth expropriation and will 'price-protect' themselves by offering a lower price (i.e., a higher costs) for a given ownership claim. Insiders bear (and therefore have an incentive to mitigate) these costs. Insiders are able to mitigate these costs by entering into monitoring and bonding agreements and providing timely information to outsiders. Smith and Warner (1979) argue that if the CCH is correct, then we should observe restrictions (covenants) written into debt contracts.

Besides covenants authors have found several other mechanisms that can be employed to protect bondholders. Prior studies have examined anti-takeover laws (Francis et al. 2010), the influence of political and legal institutions (Qi et al, 2010), the use of audit as a monitoring mechanism (Minnis, 2011), and Board independence and board structure (Anderson et al, 2004), amongst others.

Rajan and Winton (1995) argue that both covenants and collateral can be motivated as contractual devices that increase a lender's incentive to monitor firms' management. Billett et al (2007) find that covenant protection is increasing in growth opportunities, debt maturities, and leverage. The authors also argue that a negative relationship between leverage and growth opportunities is significantly attenuated by covenant protection, suggesting that covenants can mitigate the agency cost of debt for high growth firms. Chava et al (2010) argue that managerial entrenchment and the risk of managerial fraud significantly influences the use of covenants in the direction predicted by the agency-theoretic framework. Entrenched managers aggravate investment risk, but ameliorate risk from shareholder opportunism. Furthermore, covenant use responds efficiently to the quality of information available regarding the risk of managerial fraud.

Healy and Papelu (1990) find that accounting based covenants are effective means for bondholders to restrict firm's dividend policies. More recent literature that builds on the traditional view suggests that covenants are similar to trip wires that provide lenders with the option to renegotiate the loan terms by threatening the borrower with default after a decline in economic performance (Berlin and Mester (1992), Garleanu and Zwiebel (2009)).

Covenants are created in terms of a variety of accounting ratios (Leftwich (1983), Dichev and Skinner (2002)). Information asymmetry between the borrower and lender makes it difficult for the lender to assess the profitability of the firm's investment opportunities. If the lender cannot adequately asses the firm's profitability, it will under-price the firm's projected profitability and over-price firms with low profitability, which may potentially lead to market failure. This is the "lemons problem" introduced by Akerlof (1970), and it leads to incentives for borrowers to disclose additional information to the lender in order to mitigate the potential 'lemons problem'.

Accounting can have two roles in debt contracting: an information role and a direct contracting role. In the informational role, the lender uses accounting information in the initial contracting of the loan. The accounting information allows the lender to determine the likelihood of default and the potential loss given default (Amiram, 2011), and the associated loan price. The Accounting information will also allow the lender to engage in loan renegotiation (Roberts and Sufi, 2009).

Debt covenants written on accounting ratios allocate control rights to the lender in the event of poor financial performance (Aghion and Bolton, 1992). Other provisions sometimes written on accounting variables include dividend restrictions (Kalay, 1982; Li et al, 2013), performance pricing provisions (Asquith et al, 2005), and cash flow sweeps.

The direct contracting role of accounting relates to contract provisions written explicitly on accounting values. Covenants written on accounting ratios allocate control rights to the lender in the event of poor financial performance (Aghion and Bolton, 1992, Leftwich, 1983, Dichev and Skinner, 2002).

Information asymmetry between the borrower and lender makes it difficult for the lender to assess the profitability of the firm's investment opportunities. If the lender cannot adequately asses the firm's profitability, it will under-price the firm's projected profitability and over-price firms with low profitability, which may potentially lead to market failure. This is the "lemons problem" introduced by Akerlof (1970), and it leads to incentives for borrowers to disclose additional information to the lender in order to mitigate the potential 'lemons problem'.

Leuz and Verrecchia (2000), and Diamond and Verrecchia (1991) suggest that a credible commitment by managers to improve disclosure results in a reduction in information asymmetry costs related to cost of capital and trading liquidity. Under a commitment mechanism, the manager agrees to disclose information to the financier in a timely fashion,

irrespective of the observed outcome. This results in the financier needing to place a lower reliance on external information acquisition mechanisms in order to acquire information in a timely fashion. The manager bears the full cost of this information disclosure, and the financier in turn rewards the manager with lesser covenants and a lower cost of debt.

Under the Voluntary disclosure mechanism, Verrecchia (2001) argues that the informational asymmetry exists due to managers being reluctant to disclose information that may be detrimental to their own interests. Financiers would perceive this incentive by managers to not disclose detrimental information under a voluntary disclosure regime, and thereby, this information asymmetry would be priced into the debt contract in the form of a higher cost of debt and a higher number of covenants.

In order to mitigate the information asymmetry being faced by lenders, borrowers may attempt to use *Conservatism*. [11] Basu (1997) and Watts (2003a, 2003b) find that losses reported by management are informative even if they cannot be verified by external parties due to management incentive to prevent disclosure of bad news while gains reported by management are deemed less informative due to management's incentive to report good news. Further, Lafond and Roychowdhury (2008) argue that financial reporting conservatism is one potential mechanism to address agency problems between owners and managers.

However, Gigler et al (2009) and Gow (2008) suggest that conservatism may reduce the efficiency of debt contracts due to debt contracts being designed differently in accordance with the conservatism of the accounting system.

Moving away from conservatism, authors find that *timely loss recognition* is able to increase reliance of accounting information in debt contracts (Nikolaev ,2010) and to reduce the bid-ask spread on traded debt (Wittenberg-Moerman ,2008).

In terms of the use of FVA, Barth (1994) finds that fair value estimates are relevant to investors, but that the change in fair value are less relevant, compared to the HCA method. Fiechter (2011) finds that the fair value option is able to reduce the volatility of bank's earnings. Further, Laux and Leuz (2009) argue that though there are legitimate concerns surrounding marking to market in times of financial crises, it is less clear that these problems apply to FVA as stipulated under either US GAAP or IFRS. They further argue that HCA is

[11] "Conservatism" occurs when a higher degree of verification is required for gains compared to losses, that is, firms recognise losses in a timely manner, but delay the recognition of gains.

not a remedy and that there are a number of concerns surrounding historical cost and that these problems could be larger than those associated with FVA.

Authors have also raised concerns about the potential damage done by FVA when assets are illiquid or long lived, (Platin et al, 2008, Demerjian et al, 2014, Benson, 2008). The argument mainly stems from a concern that fair values not based on actual market prices will be costly to apply, and that fair values levels 2 and 3 could be easily manipulated and are not easily verifiable.

Further, research shows that FVA disclosures may only provide a limited incremental information value relevance role (Eccher et al, 1996), that debt contracts may be less likely to include financial covenants affects by FVA (Demerjian ,2011, Ball et al ,2013).

If fair values under SFAS 159 makes accounting information more(less) useful in the direct contracting role, lenders could increase (decrease) their use of financial covenants in debt contracts (Ball et al, 2013; Demerjian, 2011). Alternatively, lenders could modify contract definitions of financial covenants to adjust for the effects of SFAS 159 (Leftwich, 1983; Li, 2010, Demerjian et al, 2014). Furthermore, market values may capture information that is uninformative for debt contracting, such as temporary shocks unrelated to the borrower's future cash flows (Shivakumar, 2013). Kothari et al (2010) and Benson (2008) argue that the use of fair value also grants managers increased reporting discretion, particularly for Level 2 and Level 3 assets, and that this increase discretion could lead to reporting opportunism. However, Liao and Beatty (2014) find that the three level hierarchy under SFAS 157 provides investors with useful information.

Garleanu and Zwiebel (2009) examine the design and renegotiation of debt covenants. They introduce a model where managers are better informed than lenders regarding potential transfers (x) from the debtholders to equity-holders associated with future investments. They conclude that the adverse selection problem leads to the allocation of greater ex ante covenants (decision rights) to the lender (the uninformed party), then would be the case under symmetric information.

3. A model of the influence of accounting disclosure choice

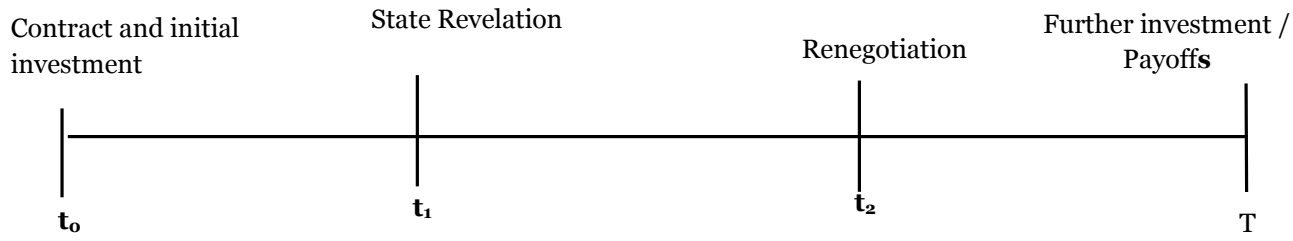
This section introduces a model which illustrates how differences in accounting disclosure choice may influence debt contracts, covenants, and the renegotiation process. The model shows how different accounting regimes cause different expectations to arise for the lender in relation to the expected loss due to activities undertaken by the equity holder to

expropriate wealth from the lender for themselves. The paper makes use of and extends the model introduced by Garleanu and Zwiebel (2009).

Model assumptions and set-up

Similar to the Garleanu and Zwiebel (2009) model, there is a wealth constrained Equity holder (E) that needs financing of I at time 0 to invest in a project. Ex ante E faces a competitive lending market and as a result she offers a break-even contract to a Lender L in return for$I$. Both E and L are assumed to be risk-neutral, and we assume that the discount rate is 0. If undertaken, the project will yield a certain return R at time T. To obtain this funding, E signs a contract {CR,D} specifying a promised (deterministic) payment D to L when the returns are realized, and an allocation of the time t_2 decision right to one party (covenants) CR ϵ {E,L}, where E implies no debt covenants issued and L implies that debt covenants are included in the loan agreement. We assume that the net cash flows are always sufficient to pay back D in all the scenarios.[12]

Figure V-1: Time Diagram



If the two parties agree and enter into such a contract, events will occur as described in the figure above. Conditional on taking on the project at time t_0, there is an opportunity to undertake a further investment at time T. This could be an expansion option on the existing project, where the additional expansion requires no further funding from the Lender. We denote this option to take or pass on the additional investment by A (accept) and NA (Not accept), respectively. The time t_0 contract specifies who has the right to make the investment decision: if this right is assigned to L, then we term this right as a covenant (CR = L),[13] and if the right is assigned to E, then we term this right as no covenant (CR = E).

[12] Net cash flows imply the cash flows realized after taking into account any additional financial reporting costs or other administrative costs.

[13] This can be viewed as a form of debt covenant that allows debt-holders to veto investments contingent on a verifiable state of the world, for example the debt to EBITDA ratio being too low.

Similar to Garleanu and Zwiebel (2009), we assume that the parties have the option to renegotiate prior to the investment decision, and that the party that does not have the decision right may need to pay the other party in order to acquire the right to decide.

After the project is undertaken at time t_0, at time t_1 the state of the world is revealed to be either good (G) or bad (B) to both the entrepreneur and the lender. An ex ante contract that is contingent on the realization of the state is assumed to be impossible to write at time 0. Prior to the revelation of the state, both E and L only know that the probability of state G is p, and therefore the probability of state B is $1 - p$. The state will not change after $t_1$and until T. The investment at time T is efficient in state G and inefficient in state B because at time T, the investment will yield an additional expected return of $y > 0$ for E and 0 for L in state G, and additional expected returns of $-y$ for L and 0 for E in state B, where y is deterministic and known ex ante by both parties.[14]

The time T investment will also result in an additional wealth transfer x[15] from L to E, due to the increased level of risk ('asset substitution')[16] or, it can also be considered as the value that E can funnel out of the firm for herself owing to the added complexity of future investment. We also assume that the value of x is a function of the value of assets of the firm, R. We assume that E knows the true realization of x at t_0, that is, we assume that E has complete information at t_0, while L only knows that x is distributed over the interval [a,b], with $0 \leq$ a $<$ b, according to the cdf **J**, that is, the functional form of x is private information known by only E at t_0. The reasoning behind this is the assumption that E may know more about the future risks inherent in a project than L due to the presence of asymmetric information. For simplicity, the model assumes that **J** is atom-less with full support over [a,b].

An important idea to note is that x is related to the wealth expropriation that E can engage in at the expense of L. Therefore, similar to Garleanu and Zwiebel (2009), we model this as occurring only when CR=E and to be the same for both states of the world. Given that x is a wealth expropriation from L, it can only exist when CR=E, that is, when the L does not have the control rights (covenants) in place to prevent activities that would transfer value from itself to E. (Tirole, 2006)

[14] y relates to the Net present Value of the new investment.
[15] x relates to the potential wealth transfer between the L and E and is independent of the additional project being undertaken.
[16] "actions increasing risk ("asset substitution): shareholders with their convex claim, benefit from increased risk taking while debt holders, with their concave claim are hurt." Tirole,J (2006) "The theory of corporate finance" p 85.

Secondly, we assume that x is a constant under both the Good and Bad states of the world. This is based on our earlier assumption that x is a function of R and given that R is a constant in both states of the world, x should exist in both states of the world and be the same. As in Garleanu and Zwiebel (2009), our model assumes that the only difference between the Good and Bad states of the world is that in the Good state, the additional investment will result in a positive value (y) to E, while in the Bad state, the additional investment will add no value to E, while destroying value for L $(-y)$.

In our model, we operationalize the difference in the information set between the two types of accounting regimes as a filtration, whereby, under one regime (FVA), the filtration allows continuously updated information, and in the other regime, the information is static. This information setup is very similar to those employed by Lambert et al (2007), Sridhar and Magee (1997) and Lambert et al (2011). These papers and more, primarily show how the quality of accounting information about a firm is able to affect its cost of capital, information asymmetry and debt covenants. In a similar fashion to our model, these papers operationalise the difference in accounting information (standards) as a change in the information set which then influences equity and debt-holders decisions.

For simplicity in the model, we assume that all firms in the world are one of two types; they either all use HCA (H) or FVA (F) accounting. Under an H regime, firms will only disclose the value/cost of the net assets (assets and liabilities) at initiation (at t_o). However, under the F regime, the firm will revalue its net assets on a continuous basis (at t_0 and t_1 in our model).

We have a multi-period model, whereby information about the firms' asset values is revealed in stages (different points in time). Some events are determined at initiation(t_0), however, some events will only be determined at t_1. This suggests the following classification of events: for each $t \leq t_1$.

$$\Im_t = \{all\ events\ determined\ in\ the\ first\ t\ periods\} \quad (1)$$

The finite sequence $(\Im_t)_{0\leq t\leq t_1}$ is a filtration of the space Ω of market scenarios. Where $\Im_t$ is indexed by the time parameter *t*. The expectation of x in our multi-period model depends on the market scenarios, but evolve in such a way that their value at any time *t*, does not depend on the unobservable post-*t* futures of the scenarios.

We further assume that prior to time t_1, L's expectation of x, is influenced by the accounting information supplied by E. In particular, we assume that the expectation will vary between the two accounting regimes (H or F). L will frame the expectation of x, based on the

accounting information concerning the value of assets R, and that due to the differences in frequency in updating the value of the assets under the two accounting regimes, the expectation will differ between the two regimes. At time t_1, the state of the world will be revealed to everyone and both L and E will know whether the State is either Good or Bad. However, only E will know the true realisation of x at t_0.

Under the H regime, information is only disclosed at time t_0 and is not further revealed post t_0, which leads to the following filtration of the information set for the H type firm:

$$\Im_t^H = \{all\ events\ determined\ at\ time\ t_0\} \tag{2}$$

While for the F type firm, the filtration follows equation (1) above.

We have:

$$\mathbb{E}_{F0}[x \mid \Im_{t0}^F] \geq x\ and\ \mathbb{E}_{F0}[x \mid \Im_{t0}^F] \geq \mathbb{E}_{F1}[x \mid \Im_{t1}^F]\ \ with\ [x \mid \Im_t^F] \sim F_0, F_1 \tag{3}$$

and

$$\mathbb{E}_{H0}[x \mid \Im_{t0}^H] \geq x\ and\ \mathbb{E}_{H0}[x \mid \Im_{t0}^H] \equiv \mathbb{E}_{H1}[x \mid \Im_{t0}^H]\ \ with\ [x \mid \Im_{t0}^H] \sim H_0\ \ , \tag{4}$$

where $[x \mid \Im_t^j]$ for $j = F, H$ relates to the estimated conditional loss (expectation of x) for each type of regime. Under F, there are two distributions, one associated with $t_0(F_0)$ and one associated with $t_1(F_1)$. Under our earlier assumptions, the estimated loss under F will be lower as new information is incorporated into the information set, this leads to equation 4, which states that under F, the $t_1$estimate of the estimated loss will be equal to the true realisation of x , which may be equal to or lower than the $t_0$estimate. The t_0 estimate will be the same under both H and F, $\mathbb{E}_{F0}[x \mid \Im_{t0}^F] = \mathbb{E}_H[x \mid \Im_{t0}^H]$.

We have:

$$\Im_0^H = \Im_{t1}^H \text{ and } \Im_0^F < \Im_{t1}^F\ \ . \tag{5}$$

That is, the information set under H is static, while under F, the information set increases with time. Equation (3) and (4) arise due to our earlier assumption that F incorporates information post t_0. Under the H regime, there will be no update of information as time progresses, however, under F, the information set will be refined and the expectation of x will be updated at t_1. Under the F regime, the filtration will allow L to obtain the true realisation of x at t_1.

For simplicity, we use the following notation:

$$x_t^j \equiv \mathbb{E}[x \mid \Im_i^j] \quad , \tag{6}$$

where x_t^j, are the expectations of x under the H ($j = H$) and F ($j = F$) accounting regimes respectively at time t. Note that x_t^j is a decreasing function of the information set, that is, with improved and increased information about the assets of the company, the lender's conditional expectation of the loss (x) decreases. Hence, given our assumption that F increases and improves the information set for the lender:

$$x_t^H \geq x_t^F \quad \forall_t \quad \text{and} \quad x = x_{t1}^F \leq x_{t0}^F \quad \forall\, t \leq t_1 \quad . \tag{7}$$

At t_0, we have $x_{t0}^H = x_{t0}^F$, that is, both set of accounting standards will give the same expectation of x at t_0. Thereafter, due to the difference in the level of public information available under the two accounting regimes, x_t^j will change for the F regime firm at t_1 but remain constant for the H regime firm.

The market value of debt:

$$B_t^j = D - x_t^j \quad for\ j = H, F \quad \text{and therefore} \quad B_t^F \geq B_t^H \tag{8}$$

The equity holders face a cost of preparing the financial statements, and for simplicity we assume that the cost of preparing is higher under F:

$$K > 0 \tag{9}$$

And there is no cost for H regime firms.

We posit that for F regime firms, the cost associated with preparing the financial statements should be more onerous given our earlier assumption of continuous updating of asset prices under this accounting regime. Hence, the incremental cost of preparing the financial statements under F is higher compared to H. Since at t_1, all information is revealed to L, we do not model preparation costs after t_1.

The debt holders also face a cost associated with acquiring and verifying the private information held by E,[17] and transferred to L via the financial statements. We assume that the verification cost for the debt holders is greater under the H regime, due to the staleness

[17] The verification costs can be costs such as due diligence, audit of managerial accounts, conference calls, etc.

of information contained in the financial statements compared to the F regime. That is, L pays a lump sum C [18] in the H regime at t_1:

$$C \geq 0 \tag{10}$$

L can obtain the true value of x, if he pays C at time t_1 for the H regime firms. Failing to do so, he will have the expectations x and x_{t0}^{H}, under F and H respectively at t_1. For the F regime firm, at t_1, the expectation is $x_{t1}^{F} = x$.

At t_1, the state of the world is revealed to L, however, L only knows the true realisation of x under the F regime, while under the H regime L only knows which state of the world they are in.[19] However, under the H regime, L is able to decide whether it is optimal for it to pay C to acquire information about the true realisation of x, and engage in renegotiation if needed. Rationally, L will only pay C and acquire the true realisation of x if there are any benefits from renegotiation.

For simplicity, we assume that $K = C$, that is, the marginal cost of preparing under the F regime is equal to the marginal cost of obtaining information for the Lender under the H regime.

If L finds itself in states (E,B) or (L,G), then it will enter the renegotiation process and pay an amount C for the H regime firm, which will allow it to acquire the true realisation of x. As a result, in these two states, the Market value of debt for H firms is the same as for a firm using F:

$$B_{t1}^{H} = B_{t1}^{F} = D - x \tag{11}$$

For simplicity we assume that in renegotiation, L makes a take-it-or-leave-it offer to E. We also assume that there is a cost associated with renegotiation ($N > 0$) that is fully borne by L. In our model, we assume that the renegotiation costs are the same under both accounting regimes. We assume that the renegotiation costs are borne by L only because we have endowed him with all the ex post bargaining power and he realizes all the bilateral gains from such a renegotiation. The presence of the non-zero renegotiation costs gives an incentive to both parties to write an initial contract at t_0 that minimizes the probability of renegotiation ex ante.

[18] We assume that C is constant, that is, the cost is not time varying and L will pay the same amount either at $t_1$or at any other time.

[19] Prior to time 1, L only knows of the distribution that x can take. Post state revelation, L obtains the true realisation of x under F but has the expectation of t_0 under H.

At time t_2, all returns are realized and the payoffs are made. We assume that R is sufficient enough so that D (which is determined in equilibrium) is less than or equal to R, even after any renegotiations. In Tables 1 and 2 below, we show the time t_2 payoffs to E and L conditional on the state of the world and the action taken. The tables show the payoffs when E has the decision right, so there is no renegotiation involved.

Table V-1: Payoffs at t_2 to (E,L) under an accounting regime based on FVA

State	A	NA	Probability
G	$(R-K-[D-x]+y\ ,\ [D-x]\ )$	$(R-K-D,\ D)$	p
B	$(R-K-[D-x]\ ,\ [D-x]-y)$	$(R-K-D\ ,\ D)$	$1-p$

Table V-1 above shows the period t_2 payoffs obtained under a F based accounting regime, where R is the realisation of the cash flows from the firm, K is the cost of preparing the financial statements, D is the face value of the debt as set out in the contract for both regimes of firms, x is the true realisation of the expected loss due from the 'risk shifting' from the firm, and y is the additional value/loss realised from undertaking the new project.

In State (G,A), the net social benefit is $R-K+y$, while in State (G,NA), the net benefit is $R-K$. In State (B,A), the net benefit is $R-K-y$, while in State (B,NA), the net benefit is $R-K$.

Table V-2 below shows the period t_2 payoffs under the H regime, the variables that are different from table 1 are K and x_{to}^{H}, K is omitted in Table 2 due to our assumption that F costs more than H to prepare, while x_{to}^{H} is the expectation of x under the H regime at t_0.

In State (G,A), the net social benefit is $R+(x-x_{\mathrm{t0}}^{\mathrm{H}})+y$, while in State (G,NA), the net benefit is R. In State (B,A), the net benefit is $R+(x-x_{\mathrm{t0}}^{\mathrm{H}})-y$, while in State (B,NA), the net benefit is R.

Table V-2: Payoffs to (E,L) under a HCA regime at t_2.

State	A	NA	Probability
G	$(R-[D-x]+y\ ,\ [D-x_{\mathrm{t0}}^{\mathrm{H}}])$	$(R-D,\ D)$	p
B	$(R-[D-x]\ ,\ [D-x_{\mathrm{t0}}^{\mathrm{H}}]-y)$	$(R-D,\ D)$	$1-p$

According to both Table V-1 and Table V-2 above; when NA (No additional project) is chosen, the payoffs are insensitive to both the state and to private information concerning x. In the context of debt covenants, NA can be interpreted as a decision that is independent of E's private information. Further, absent any costs of renegotiation, L would always prefer NA to A, while E would prefer A to NA. However, the socially optimal decision (given by the sum of E's and L's payoffs) would be to accept the investment (A) in the Good state G and to reject the investment (NA) in the Bad state B. Finally, the constant R in the model is required to ensure that the payments by E are feasible under the interpretation of an ex ante wealth constrained entrepreneur.

4. Equilibrium and Analysis

Our starting point is the benchmark case introduced by Garleanu and Zwiebel (2009), in which there is no asymmetric information present.

Proposition 1. If the two parties are symmetrically informed about x at time 0, then L receives control rights whenever $p < \frac{1}{2}$, while E receives control rights whenever $p > \frac{1}{2}$, with the two parties being indifferent between the two types of contracts when $p = \frac{1}{2}$.

The proposition above arises from observing that under symmetric information E simply offers the break-even contract to L that leads to the minimum future renegotiation costs. When both parties know the true realisation of x at time 0, then $x_{t0}^{j} = x$ for both regimes of firms and there is no need for L to acquire information at $t_1$for C for an H regime firm.

When CR = L, that is, when the firm offers the lender debt covenants, costly renegotiation is averted in the bad state, whereas when CR = E, that is, the firm does not offer the lender debt covenants, renegotiation costs are averted in the good state. When the bad state is more likely than the good state, than the expected costs will be the smallest when CR = L, and vice versa.

As per the Garleanu and Zwiebel (2009) model, we use a Pure-Strategy Perfect Bayesian Equilibria (PSPBE). In order to ensure that the ex post renegotiation ensues when the inefficient action would otherwise be taken, we assume that $N < y$ and $C + N < y$ under the F and H regimes respectively. That is, we assume the efficiency gains from renegotiating,

including the gains from renegotiating the debt, exceed the total cost of information acquisition and renegotiation for the F and H regime firm.[20]

Table V-3: Net Payoffs before renegotiation to (E,L) under a FVA regime.

State	CR=E	CR=L	Probability
G	$(R-K-[D-x]+y,\ D-x)$	$(R-K-D,\ D)$	p
B	$(R-K-[D-x],\ D-x-y)$	$(R-K-D,\ D)$	$1-p$

Table V-4: Net Payoffs after renegotiation to (E,L) under a FVA regime.

State	CR=E	CR=L	Probability
G	$(R-K-[D-x]+y,\ D-x)$	$(R-K-D,\ D+y-N)$	p
B	$(R-K-[D-x],\ D-x-N)$	$(R-K-D,\ D)$	$1-p$

Table V-5: Net Payoffs before renegotiation to (E,L) under a HCA regime.

State	CR=E	CR=L	Probability
G	$(R-[D-x]+y\ ,[D-x_{t0}^{H}])$	$(R-D\ ,D\ )$	P
B	$(R-[D-x],\ D-x_{t0}^{H}-y)$	$(R-D,D)$	$1-p$

Table V-6: Net Payoffs after renegotiation to (E,L) under a HCA regime.

State	CR=E	CR=L	Probability
G	$(R-[D-x]+y\ ,[D-x_{t0}^{H}])$	$(R-D\ ,D+y-N\ )$	P
B	$(R-[D-x],\ D-x-C-N)$	$(R-D,D)$	$1-p$

Table V-3 and Table V-5 show the payoffs in the four states at t_2 if no renegotiation or information acquisition is carried out under the F and H regimes respectively. Under both

[20] If the assumption holds for H firms, by definition it must hold for F regime firms as well.

regimes, E knows the true realisation of x at t_0, however, L only has the true realisation of x under F, while under H he only has the expectation of x formed at t_0.

Table V-4 and Table V-6 show the payoffs in the four states at t_2 if L enters renegotiation and information acquisition is carried out under the F and H regimes respectively. In States (E,G) and (L,B) under both accounting regimes, L has no incentive to renegotiate, and subsequently acquire information, given that he would not benefit from this action. However, in states (E,B) and (L,G), there is room for renegotiation and to acquire information. Therefore, under both regimes, in (E,B) and (L,G) L will renegotiate the contract and acquire the true realisation of x in state (E,B).

We start the analysis by examining the payoffs in time t_2, assuming that L will acquire information and learn the true realisation of x prior to t_2, if it is beneficial for L to acquire information. We will define the 'state' at this time by a pair (CR,s), where the first element CR ϵ (E,L) indicates who possess the decision right, and the second element s ϵ (G,B) indicates whether the investment state is good or bad (which is known by both parties at time t_2).

There are four states to consider. In two of the states, (E,G) and (L,B), there is no scope for renegotiation, as the owner of the right already prefers the optimal decision.

In State (E,G), the net payoffs at t_2, to E and L under the F regime are $(R - K - [D - x] + y)$ and $(D - x)$. While under the H regime, it is given by $(R - (D - x) + y)$ and $[D - x_{t0}^{H}])$ for E and L respectively.

In State (L,B), the net payoffs at t_2, to E and L under the F regime are $(R - K - D)$ and (D). While under the H regime, it is given by $(R - D)$ and(D) for E and L respectively.

Note that if L is not informed prior to time t_2 in one of these two states under the H regime, then there is no need for him to become informed, that is, he should not pay C at t_2, given that such information will yield no additional benefit. This implies that the acquisition of information may be unnecessary in certain states of the world. In this model, information acquisition becomes unnecessary in states (E,G) and (L,B) under both type of accounting regimes given that the control rights already exist with the appropriate party and there will be no additional benefit that L can obtain from acquiring information in these two states.

If instead the state is (L,G), or (E,B), renegotiation is needed. In (E,B) under the F regime, absent the possibility of a renegotiation, E would choose the inefficient action A, given that such an action would yield him $R - K - (D - x) > R - K - D$, despite a 'Social Welfare'

payoff (the sum of E's and L's payoffs) that is less than he would achieve under no action scenario, that is, $R - K - y < R - K$. Given this, L will offer an additional payment x to E in exchange for not taking any action. As a result, the final net payoffs including the cost of preparing the financial statements and acquiring information are $(R - K - (D + x))$ and $(D - x - N)$ for E and L respectively.

Under the H regime, in the state (E,B), E would prefer A, absent renegotiation, given that such a decision would yield him $R - (D + x) > R - D$, that gives a combined payoff that is more than he would achieve if no action is taken. Given this, L will need to offer an additional payment x to E in exchange for her to take any action. As a result, the final net payoffs including the cost of acquiring information are$(R - D + x)$ and $(D - x - C - N)$.

In a similar manner, for the state (L,G) under the F regime, absent renegotiation, L would choose NA; thus L will ask for E's entire incremental return from the project (y), in exchange for taking decision A instead of NA. Such an action results in payoffs of $(R - K - D)$ and $(D + y - N)$ for E and L respectively. Under the H regime, the payoffs would be $(R - D)$ and $(D + y - N)$ for E and L respectively. The final net payoffs in the four states are shown in Panels B Tables 3 and 4 above. Note that Table V-3,Table V-4,Table V-5, and Table V-6 differ from Table V-1and Table V-2 in the sense that in the 'inefficient states', that is, states (L,G) and (E,B), renegotiation yields in additional benefits of y and$[x_{t0}^{H} - x]$[21], which are shared between L and E. These efficiency gains are obtained by acquiring information by paying C and renegotiating the debt contract (N).

Moving to the t_0 contract, in any pure strategy equilibrium, there can be at most one contract that is associated with each choice of the decision right CR. That is, if a contract {CR,D} is accepted in equilibrium, no type of E would offer the contract {CR,D'}, D' > D. As a result, there are at most two contracts offered in equilibrium, one with CR = E and one with CR = L. Let $S_E \subseteq [a,b]$ denote the set of firms who offer a contract with CR = E, in equilibrium.

In the case where L may acquire information before time t_2, if renegotiation occurs; due to ex ante competition between lenders, L must break even for the equilibrium contract. Equilibrium contracts will incorporate correctly that renegotiation will occur in states (E,B) and (L,G) and not in states (E,G) and (L,B), and therefore, the contract will correctly incorporate the additional costs of renegotiation and information acquisition borne in states (E,B) and (L,G). Given the net payoffs in Table V-4 and Table V-6 above, D is determined

by the ex-ante indifference conditions for L. These conditions, for contracts with CR = E and CR = L, respectively, are[22]

$$I = D - px_{t0}^{H} - (1-p)x - (1-p)(C+N) \tag{12}$$

and

$$I = D + p\,(y - N) \tag{13}$$

For the firm producing its financial information under the H regime, and:

$$I = D - x - (1-p)(N) \tag{14}$$

and

$$I = D + p\,(y - N) \tag{15}$$

For the firm producing its financial information under the F regime. We assume that N is independent of the accounting policy being followed by the firm, and as a result it is assumed to be constant. Given our earlier assumptions concerning the influence of accounting policy on the expectation of x, the model assumes that the Lender observes the following ranking with regards to the expectation of x, $x_{t1}^{F} < x_{t0}^{H}$. That is, the expected loss is assumed to be lower under the F regime, and higher under the H regime. With D satisfying these conditions, the final payoff (Utility) to E for the contracts with CR = E and CR =L are in turn respectively,

$$U_{CR=E}^{E} = R - I + px - px_{to}^{H} - (1-p)(C+N) + py \tag{16}$$

and

$$U_{CR=L}^{E} = R - I + py - pN \tag{17}$$

For the firm using the H regime, and:

$$U_{CR=E}^{E} = R - I - (1-p)N + py + K \tag{18}$$

and

$$\mathrm{U}_{\mathrm{CR=L}}^{\mathrm{E}} = R - I + py - pN \tag{19}$$

For the firm preparing its financial information under the F regime.

[22] The cost of preparing the financial statements under the two different accounting regimes does not factor into the indifference curves for L. The cost will have a bearing on the net profit of E and is assumed to be not built into the creation of D.

As in Garleanu and Zweibel (2009), E's payoff increases with x when CR = E and is independent of x when CR = L. As a result, if firm x' weakly prefers {E,D} to {L,D'}, then all higher firms $x' > x$ would strictly prefer the {E,D} contract. Also, if firm x weakly prefers {L,D'} to {E,D}, then all lower firms $x' < x$ would strictly prefer the {L,D'} contract. These conditions arise because when we have $x' > x$, all firms above x would prefer the {E,D} contract as it would provide E with the greater payoff, while if we have $x' < x$ then all firms below x would prefer the {L,D'} contract as it would provide E with the greater payoff.

As a result, in any PBPSE there will be a cut-off level $\bar{x}$ where all firms below $\bar{x}$ pool together by offering the same contract with CR = L, and all firms above $\bar{x}$ pool on a single contract with CR = E. As a result, the set $S_E$is of the form [$\bar{x}$, b].

We define G (u) as follows:

$$G\ (u)\ \equiv E[x|\ x\ S_E \cap\ \Im_{t0}^{H} \geq u] - u \tag{20}$$

Where, G $\left(\overline{x^H}\right)$ shows the difference between the average firm in the pool [$\bar{x}$, b] of firms above $\bar{x}$, and the lowest firm $\bar{x}$ in the pool for the H regime.

We define G (u) as follows:

$$G\ (u)\ \equiv E[x|\ x\ S_E \cap\ \Im_{t0}^{F} \geq u] - u \tag{21}$$

Where, G $\left(\overline{x^F}\right)$ shows the difference between the average firm in the pool [$\bar{x}$, b] of firms above $\bar{x}$, and the lowest firm $\bar{x}$ in the pool for the F regime.

In equilibrium, the cut-off firm $\bar{x}$ must be indifferent between keeping and giving up the decision right. Equating the above expressions (16), (17) for the H regime and the expressions (18) and (19) for the F regimes respectively, then implies that G $\left(\overline{x^H}\right)$ is given by

$$\text{G}\left(\overline{x^H}\right) = p(x - x_{to}^{H}) - (1-p)C - (1-2p)N \tag{22}$$

For the firm that prepares its financial information under the H regime, and

$$\text{G}\left(\overline{x^F}\right) = -(1-2p)N + K \tag{23}$$

Equation (23) implies the G $\left(\overline{x^F}\right)$ under the F regime. Which leads us to our Propositions 2 and 3 below.

Proposition 2. In the H regime world, assume that L pays C and learns x at time t_1 if there is scope for renegotiation. Then, a PSPBE always exists, and takes the following form:

i. If G $\left(\overline{x^H}\right) > p(x - x_{to}^H) - (1-p)C - (1-2p)N$ for all $\bar{x} \in [a, b]$, then all firms offer CR = L. The promised payment is $D = I - p\ (y - C - N)$.

ii. If G $\left(\overline{x^H}\right) < p(x - x_{to}^H) - (1-p)C - (1-2p)N$ for all $\bar{x} \in [a, b]$, then all firms offer CR = E. The promised payment is $D = I + x_{t0}^H + (1-p)(C + N)$.

iii. If there exists $\bar{x} \in [a, b]$such that G$\left(\overline{x^H}\right) = p(x - x_{to}^H) - (1-p)C - (1-2p)N$, then firms $x \geq \bar{x}$ offers CR = E, while firms $x \leq \bar{x}$ offer CR = L. The promised payments are $D = I + E[x \mid \{x \geq \bar{x}\} S_E \cap \Im_{t0}^H] + (1-p)(C + N)$ when CR = E and $D = I - p\ (y - C - N)$ when CR = L.

Proposition 3. In the F regime world, assume that L learns x at time t_1 if there is scope for renegotiation. Then, a PSPBE always exists, and takes the following form:

i. If G $\left(\overline{x^F}\right) > -(1-2p)N + K$ for all $\bar{x} \in [a, b]$, then all firms offer CR = L. The promised payment is $D = I - p\ (y - N)$.

ii. If G $\left(\overline{x^F}\right) < -(1-2p)N + K$ for all $\bar{x} \in [a, b]$, then all firms offer CR = E. The promised payment is $D = I + x_{t0}^F + (1-p)N$.

iii. If there exists $\bar{x} \in [a, b]$such that G $\left(\overline{x^F}\right) = -(1-2p)N + K$, then firms $x \geq \bar{x}$ offers CR = E, while firms $x \leq \bar{x}$ offer CR = L. The promised payments are $D = I + E[x \mid \{x \geq \bar{x}\} S_E \cap \Im_{t0}^F] + (1-p)(N)$ when CR = E and $D = I - p\ (y - N)$ when CR = L.

Since J is atom-less and G is continuous, the condition for case (iii) will be satisfied if we are not in case (i) or in case (ii), and therefore, the three cases in Propositions 2 and 3 give the complete space of parameters for the H and F regime worlds respectively.

The interpretation of propositions 2 and 3 is as follows; the term $p(x - x_{to}^H)$ measures the influence of the information set concerning the expectation of x under the H regime, that occurs at t_0 and which influences the renegotiation process and the initial allocation of rights. The term x for both the H and F regimes refers to the true realisation of x which is known by E at t_0, the terms x_{to}^H and x_{to}^F refer to the expectation of x formed by L at t_0. The term px_{to}^H relates to the expectation of x at t_0 under the H regime, when the state is (E,G) and there is no room for renegotiation.

The terms $(1-p)C-(1-2p)N$, and $(1-2p)N+K$, measure the additional renegotiation and information acquisition costs that must be undertaken when CR = L instead of CR = E under the H and F regimes respectively. This cost is given by $p(N)-(1-p)(C+N) = (1-p)C-(1-2p)N$ and by $p(N+K)-(1-p)(N+K) = (1-2p)N+K$ for the H and F regimes respectively.

This total expression is negative if $p<\frac{1}{2}$, which implies lower renegotiation costs under CR = L compared to CR = E when $p<\frac{1}{2}$.

Moving on to $\mathrm{G}\left(\overline{x^H}\right)$ and $\mathrm{G}\left(\overline{x^F}\right)$, suppose that firms [u,b] retain the decision right; then, L would expect asset-substitution given by $[\,x \mid x\,S_E \cap \Im_{t0}^{H} \geq u\,]$ and $[\,x \mid x\ S_E \cap \Im_{t0}^{F} \geq u\,]$ respectively for H and F when CR = E, for which L must be reimbursed ex ante. The intuition behind this is that absent renegotiation, E would always choose A if she had the decision right, and L would always choose NA.

The lowest firm choosing CR = E (firm u), would only benefit from the asset substitution activity by the amount u. The difference, $[\,x \mid x\,S_E \cap \Im_{t1}^{H} \geq u] - \mathrm{u} = \mathrm{G}\left(\overline{x^H}\right)$ and $[\,x \mid x\ S_E \cap \Im_{t1}^{F} \geq u] - \mathrm{u} = \mathrm{G}\left(\overline{x^F}\right)$, measures the adverse selection opportunity costs borne by the lowest firm u choosing CR = E under the H and F regimes respectively.

In equilibrium, all firms must compare the adverse selection cost from choosing CR = E with the excess renegotiation costs from choosing CR = L. The adverse selection cost is greatest for the lowest firm choosing CR = E, and this is always positive. The excess renegotiation cost is only positive if $p \geq \frac{1}{2}$. However, in the case of $p<\frac{1}{2}$, the renegotiation costs will be less for CR = L than for CR = E, and as a result, there will be no equilibrium with some firms choosing CR = E; the lowest firm choosing CR = E would always benefit by instead choosing CR = L. As a result, in case (i) of Proposition 2 and 3, all types will choose CR = L. This result corresponds to the symmetric information benchmark shown in proposition 1 above. The promised payment being $D = I - p\,(y - C - N)$ for the H regime firm, and $D = I - p\,(y - N)$ for the F regime firm. The contracted face value of debt will be lower in this case for the F regime firm due to the absence of the information acquisition costs incorporated in the debt.

If however, we have the case that as in case $\mathrm{G}\left(\overline{x^H}\right) < p(x - x_{to}^{H}) - (1-p)C - (1-2p)N$ and $\mathrm{G}\left(\overline{x^F}\right) < -(1-2p)N + K$ for Propositions 2 and 3 (ii), then for all such firms, the decision right will be given to E (CR = E). And the promised payment will be $D = I + x_{t0}^{H} +$

$(1-p)(C+N)$ and $D = I + x_{t0}^{F} + (1-p)(N)$ under the H and F regimes respectively. Again, the contracted face value of debt will be lower in this case for the F regime compared to the H regime due to the absence of the information acquisition cost incorporated in the debt. In this scenario, all such firms will retain the decision rights, that is, no debt covenants (CR = E) will be included in the debt.

As long as $p(x - x_{to}^{H}) - (1-p)C - (1-2p)N - 2py$ does not exceed $G^{J} \equiv max_{x}\mathrm{G}(\overline{x^{H}})$, case (iii) is obtained in proposition 2, and $-(1-2p)N - 2py + K$ does not exceed $G^{J} \equiv max_{x}\mathrm{G}(\overline{x^{F}})$ we have the case (iii) that is obtained in proposition3. In these cases, such lower firms will prefer to give the right to L (CR = L) despite the inefficiency in renegotiation and information acquisition costs. This result arises due to the additional renegotiation and information acquisition costs that must be borne when CR = L instead of CR = E are less for some lower firms than the adverse selection costs they would incur by retaining the right together with all the high types who choose to do so. In equilibrium, the lowest firm choosing CR = E is indifferent; that is, he must face adverse selection costs equal to the information and renegotiation inefficiency costs of instead choosing CR = L, that is, the cut off firm is given by $\mathrm{G}(\overline{x^{H}}) = p(x - x_{to}^{H}) - (1-p)C - (1-2p)N - 2py$ and $\mathrm{G}(\overline{x^{F}}) = -(1-2p)N - 2py + K$ for the H and F regime firms respectively. From this result, it follows that the H firm will offer a debt contract with $D = I + E[x \mid \{x \geq \bar{x}\}S_{E} \cap \Im_{t0}^{H}] + (1-p)(C+N)$ when it retains the right (CR = E) and a contract with a contracted amount of $D = I - p\,(y - C - N)$, when it gives the Lender the decision right (CR = L).

In the F firm case, she will offer a debt contract with $D = I + E[x \mid \{x \geq \bar{x}\}S_{E} \cap \Im_{t0}^{F}] + (1-p)(N)$ when she retains the right (CR = E) and a contract with a contracted amount of $D = I - p\,(y - N)$, when she gives the Lender the decision right (CR = L).

In proposition 2 above, we assume that under the H regime, if L is uniformed concerning the true realisation of x going into t_1, then he will prefer to acquire information in only two states, namely (E,B) and (L,G), that is, only in the states where there is a benefit from debt renegotiation. Proposition 4 below states that the decision to acquire information in the two states is influenced by two factors: the level of C and the change in the expected value of $(x_{t1}^{H} - x)$. If the losses to L from bargaining with asymmetric information is strictly higher than 0, then information acquisition will be preferred if the cost of so doing is small and the additional information concerning the change in x is sufficient to justify the cost of acquiring information. In the H regime case, if L does not acquire information prior to t_1, there is a $\bar{C} > 0$, such that for $C < \bar{C}$, L acquires information at t_1 in states (E,B) and (L,G), and

where $(x_{t0}^{H} - x) \geq \bar{C}$. That is, the cost to acquire information is less than the estimated benefit from obtaining the true realisation of x.

In the F regime, the information set will incorporate the new information arising at t_1, and therefore, L acquires the true realisation of x at t_1. As a result, L will not face the same cost benefit exercise as done under the H regime.

Proposition 4. Assume that L does not know the true realisation of x at t_1. Then for situations where $C < \bar{C}$ exists, then L will acquire information at t_1 in both states (E,B) and (L,G) for the H regime. However, if $\bar{C} < C$ occurs, then L will not acquire information at t_1 for the H regime in states (E,B) and (L,G).

L may have an incentive to acquire Information earlier under the H regime than t_1, if the resulting break-even contract results in a higher expected profits for him, given that he will be competing ex ante against other lenders for the debt contract.

If L acquires information at time t, then he will need to pay C at time *t* under the H regime, while the expected renegotiation cost is pN and $(1-p)N$. If we assume that information can be acquired by L either at time t or at time t_1, the time t action will only be efficient if there are no gains from renegotiation. If there are any potential gains from negotiation then, the time t_1 action will be efficient. Given our assumption of risk neutral players, the debt contract that will maximize E's utility subject to L breaking even will be the contract that will minimize the sum of the expected information acquisition costs, the expected renegotiation costs and incorporate any benefits from renegotiating the debt contract. As a result, the choice between acquiring information at time t or acquiring information at time t_1 will be determined by simply comparing these factors as per Proposition 5 below.

Proposition 5. If C is small enough so that L would acquire information at time t_1 when there are gains from renegotiation if he had not already acquired information at time t. Then, L acquires information at time t if and only if:

$$C + min(p, 1-p)\, N[pJ(x_{t0}^{H}) + (1-p)(1 - J(x_{t0}^{H})]) \leq (C+N)[pJ(x) + (1-p)\big(1 - J(x)\big)] \quad (24)$$

Not acquiring information in time t_1 under the H regime may result in inefficiency if the true realisation of x is different from the initial expectation of x at $t_0$and can be acquired only once the state of the world is revealed at t_1 . Under the H regime, the financial

statements will not incorporate the fair values of the assets as at time t_1; and hence the expectation of x will be that formed in t_0 unless L pays C to acquire the true value of x.

The Lender will only acquire information at time t_1 and not earlier, if the 'Savings' are less than the cost of acquiring information at t_1. This statement would hold as long as the net gain from acquiring the information (net of acquisition costs) is positive.

Information acquisition at time t_1 leads to savings of S_H and S_F, when compared to acquiring information early. Where $S_H = C - C(pJ(x) + (1-p)\big(1 - J(x)\big)$ being the cost savings for H regime and $S_F = 0 - 0(pJ(x) + (1-p)\big(1 - J(x)\big)$, and where we have $S_H > S_F$, given our earlier assumption that $C > 0$. The term $(pH(x) + (1-p)\big(1 - H(x)\big)$ relates to L acquiring the true realisation of x (Benefit from information acquisition), while the C terms relate to the cost saving and the cost incurred.

However, information acquisition is able to reduce the expected renegotiation costs by minimising the probability of renegotiation, which provides a reduction in cost of $N\left(max[(1-2p), 0] - (1-2p)J(\widehat{x_{t0}^{J}}\right)$. Whether earlier information acquisition is preferred by L compared to later information acquisition will depend on the degree to which the additional information costs net of the additional information, compares to the saved renegotiation costs.

If $S_H < N\big(max[(1-2p), 0] - (1-2p)H(\widehat{x_{t0}^{H}}\big)$, then L will acquire information earlier (at time t) for the H regime firm. If however, we have the case where $0 < N\big(max[(1-2p), 0] - (1-2p)H(\widehat{x_{t0}^{H}}\big) < S_H$, then L will delay information acquisition for the H regime firm.

Propositions 4 and 5 can be interpreted as the propensity of debt renegotiations under each accounting regime. The model suggests that under the F type regime, there is a higher probability of debt renegotiation as the cut-of level for obtaining information for L is expected to be lower than for an identical firm using H.

5. Extensions to the Base Model

In this section, we introduce two extensions to the base model: (1) we allow for the HCA firm to voluntarily adopt FVA prior to time T (Proposition 6), and (2) we allow for the FVA type firms to have different levels of information quality sets (Proposition 7), which are meant to proxy for the different FVA levels.

For brevity, we only show the incremental differences due to the extensions to our base model, and the resulting implications.

Allowing the HCA firm to switch to FVA prior to renegotiation:

In this section, we examine the possibility of a HCA type firm to move to FVA[23] (HF) prior to the renegotiation date. Following on from equations (2) to (5), the information set for the HF firm will become:

$$\Im_{t1}^{HF} = \{all\ events\ determined\ at\ time\ t_1\} \quad (25)$$

And

$$\Im_{t1}^{HF} = \Im_{t1}^{F} \text{ and } \Im_{t1}^{H} < \Im_{t1}^{HF} \quad (26)$$

We assume that this will cause the information set to be the same under both the HCA and FVA scenarios at t_1.

And

$$x_{\mathrm{t}}^{\mathrm{H}} \geq x_{\mathrm{t}}^{\mathrm{F}} = x_{\mathrm{t}}^{\mathrm{HF}} \ \forall_t \quad \text{and} \quad x = x_{\mathrm{t1}}^{\mathrm{F}} = x_{\mathrm{t1}}^{\mathrm{HF}} \leq x_{\mathrm{t0}}^{\mathrm{F}} \ \forall\, t \leq t_1 \quad (27)$$

If E finds itself in states (E,B) or (L,G), then it has the incentive to switch from H to F and to enter the renegotiation process and incur K additional resources in preparing the financial information. This will allow the L to acquire the true realisation of x without the need to pay C, as in the F case.

Table V-7: Net Payoffs before renegotiation to (E,L) under a HCA regime at $t_2$regime at t_2

State	CR=E	CR=L	Probability
G	$(R - [D - x] + y\ , [D - x_{t0}^{H}])$	$(R - D\ , D\ )$	P
B	$(R - [D - x]\ , D - x_{t0}^{H} - y)$	$(R - D, D)$	$1 - p$

[23] In the case of the extension, we assume that a switch by the HCA firm can either be via a switch to FVA prior to renegotiation, or a 'revaluation' by the HCA type firm. In either case, we model the switch in an identical manner and assume that it would influence costs and information flow in an identical manner.

Table V-8: Net Payoffs after renegotiation to (E,L) under a HCA regime at t_2.

State	CR=E	CR=L	Probability
G	$(R-[D-x]+y\ ,[D-x_{t0}^{H}])$	$(R-D\ ,D+y-N\ )$	P
B	$(R-K-[D-x]\ ,\ D-x-N)$	$(R-D,D)$	$1-p$

Table V-7 show the payoffs in the four states at t_2 if no renegotiation or information acquisition is carried out under the H regime

Table V-8 show the payoffs in the four states at t_2 if L enters renegotiation and information acquisition is carried out under HF regime.

The conditions, for contracts with CR = E and CR = L, respectively, are[24]

$$I = D - px_{t0}^{H} - (1-p)(x+N) \tag{28}$$

and

$$I = D + p\ (\ y - N) \tag{29}$$

With D satisfying these conditions, the final payoff (Utility) to E for the contracts with CR = E and CR =L are in turn respectively,

$$U_{CR=E}^{E} = R - I + px - px_{to}^{H} - (1-p)(N) + py + (1-p)K \tag{30}$$

and

$$U_{CR=L}^{E} = R - I + py - pN \tag{31}$$

Equating the expressions (30) and (31) for the HF regime implies that G $\left(\overline{x^{HF}}\right)$ is given by:

$$\text{G}\left(\overline{x^{HF}}\right) = p(x - x_{to}^{H}) - (1-2p)N + (1-p)K \tag{32}$$

Where G $\left(\overline{x^{HF}}\right)$ shows the difference between the average firm in the pool $[\bar{x}, \text{b}]$ of firms above $\bar{x}$, and the lowest firm $\bar{x}$ in the pool for the HF regime.

Proposition 6. In the HF regime world, assume that L learns x at time t_1 if there is scope for renegotiation. Then, a PSPBE always exists, and takes the following form:

[24] The cost of preparing the financial statements under the two different accounting regimes does not factor into the indifference curves for L. The cost will have a bearing on the net profit of E and is assumed to be not built into the creation of D.

i. If $G\left(\overline{x^{HF}}\right) > p(x - x_{to}^{H}) - (1-2p)N + (1-p)K$ for all $\bar{x} \in [a, b]$, then all firms offer CR = L. The promised payment is $D = I - p\,(y - N)$.

ii. If $G\left(\overline{x^{HF}}\right) < p(x - x_{to}^{H}) - (1-2p)N + (1-p)K$ for all $\bar{x} \in [a, b]$, then all firms offer CR = E. The promised payment is $D = I + x_{t0}^{H} + (1-p)(x + N)$.

iii. If there exists $\bar{x} \in [a, b]$ such that $G\left(\overline{x^{HF}}\right) = p(x - x_{to}^{H}) - (1-2p)N + (1-p)K$ then firms $x \geq \bar{x}$ offers CR = E, while firms $x \leq \bar{x}$ offer CR = L. The promised payments are $D = I + E[x \mid \{x \geq \bar{x}\} S_E \cap \Im_{t0}^{H}] + (1-p)(x + N)$ when CR = E and $D = I - p\,(y - N)$ when CR = L.

Since J is atom-less and G is continuous, the condition for case (iii) will be satisfied if we are not in case (i) or in case (ii), and therefore, the three cases in Proposition 6 give the complete space of parameters for the HF regime.

The interpretation of proposition 6 is as follows; the term $p(x - x_{to}^{H})$ measures the influence of the information set concerning the expectation of x under the H regime, that occurs at t_0 and which influences the renegotiation process and the initial allocation of rights.

The terms $(1-2p)N + (1-p)K$, measure the additional renegotiation and information acquisition costs that must be undertaken when CR = L instead of CR = E. This total expression is negative if $p < \frac{1}{2}$, which implies lower renegotiation costs under CR = L compared to CR = E when $p < \frac{1}{2}$.

Similar to Propositions 2 and 3 above, in case (i) of Proposition 6, all types will choose CR = L. The promised payment will be $D = I - p\,(y - N)$. The contracted face value of debt will be lower in this case for the HF firm compared to the H firm and similar to the F regime firm due to the absence of the information acquisition costs incorporated in the debt.

For Proposition 6 (ii), the decision right will be given to E (CR = E). And the promised payment will be $D = I + x_{t0}^{H} + (1-p)(x + N)$. Again, the contracted face value of debt will be lower in this case for the HF regime compared to the H regime due to the absence of the information acquisition cost incorporated in the debt. In this scenario, all such firms will retain the decision rights, that is, no debt covenants (CR = E) will be included in the debt.

As long as $p(x - x_{to}^{H}) - (1-2p)N + (1-p)K$ does not exceed $G^{J} \equiv max_{x} G\left(\overline{x^{H}}\right)$, case (iii) is obtained in proposition 6. In these cases, such lower firms will prefer to give the right to L (CR = L) as in Proposition 2 and 3 above. The cut off firm is given by $G\left(\overline{x^{HF}}\right) =$

$p(x - x_{to}^{H}) - (1 - 2p)N + (1 - p)K$. As a consequence, the HF firm will offer a debt contract with $D = I + E[x \mid \{x \geq \bar{x}\} S_E \cap \Im_{t0}^{H}] + (1 - p)(x + N)$ when it retains the right (CR = E) and a contract with a contracted amount of $D = I - p\,(y - N)$, when it gives the Lender the decision right (CR = L).

In proposition 6 above, we assume that under the H regime, if L is uniformed concerning the true realisation of x going into t_1, then the E will switch to the F (HF) regime in order to inform the L with the true realisation of x prior to the renegotiation. We find that E will only have an incentive to switch to F prior to renegotiation in only two states of the world, namely (E,B) and (L,G), that is, only in the states where there is a benefit from debt renegotiation.

The extension's predictions are in line with academic research that finds that the timely recognition of losses (Conservatism) by the firm leads to improvement in the contracting ability of financial statement information (Nikoalaev 2010, Watts 2003a, 2003b, Lafond and Roychowdhury 2008).

Allowing the different information sets under FVA in line with the FVA classifications:

In our main model, we assume that the use of FVA (F regime) leads to an improvement in the information set over the H type regime. However, Platin et al (2008), Demerjian et al (2014), Benson (2008) amongst others, have raised the prospect that not all FVA classifications are the same. In particular, these authors raise the serious possibility that the Level 2 and the Level 3 classifications could be easily manipulated and are not easy to verify compared to the Level 1 classification.

As a result, in this section we will expand the base model and incorporate the possibility that the information set for the F type firm may include 'noise'. For the purpose of simplicity, we will compare and contrast only the F type and the FN (Fair Value Noisy) type firms in this section.

Following on from equations (2) to (5), the information set for the FN firm will become:

$$\Im_{t1}^{FN} = \{all\ events\ determined\ at\ time\ t\} \tag{33}$$

And

$$\Im_{t1}^{FN} \leq \Im_{t1}^{F} \text{ and } \ t \leq t_1 \tag{34}$$

That is, we model the 'noisy' FVA regime as one in which the information set does not completely incorporate all the relevant information at time t_1, whereas in the base FVA

regime, which can be thought of as the FVA Level 1 case, the information set at t_1 contains all the relevant information.

And

$$x_{\mathrm{t}}^{\mathrm{FN}} \geq x_{\mathrm{t}}^{\mathrm{F}} \ \forall_t \ \text{and} \ \ x = x_{\mathrm{t1}}^{\mathrm{F}} \leq x_{\mathrm{t1}}^{\mathrm{FN}} \leq x_{\mathrm{t0}}^{\mathrm{F}} = x_{\mathrm{t0}}^{\mathrm{FN}} \ \ \forall\, t \leq t_1 \tag{35}$$

For simplicity we assume that the cost of preparing is equal for the FN and the F type firm (K).

For simplicity we assume that L can obtain the true value of x under the FN regime, if he pays C at time t_1, whereas we assume that he does not need to pay C under the F type firms. Failing to do so, he will have the expectations x and $x_{\mathrm{t1}}^{\mathrm{FN}}$, under the F and FN, and regimes respectively at t_1.

As in the base model, if L finds itself in states (E,B) or (L,G), then it has the incentive to acquire information at t_1 and obtain the true realisation of x.

Table V-9: Net Payoffs before renegotiation to (E,L) under a FVA at $t_2$regime at t_2.

State	CR=E	CR=L	Probability
G	$(R-K-[D-x]+y\ ,\ D-x_{t1}^{FN})$	$(R-K-D,\ D)$	P
B	$(R-K-[D-x]\ ,\ D-x_{t1}^{FN}-y)$	$(R\ -K-\ D\ ,\ D)$	$1-p$

Table V-10: Net Payoffs after renegotiation to (E,L) under a FVA regime at t_2.

State	CR=E	CR=L	Probability
G	$(R-K-[D-x]+y\ ,[D-x_{t1}^{FN}])$	$(R-K-\ D\ ,\ D+\ y-N\ )$	P
B	$(R-K-[D-x]\ ,\ \ D-x-C-N)$	$(R\ -K-D,\ \ D)$	$1-p$

Table V-9 show the payoffs in the four states at t_2 if no renegotiation or information acquisition is carried out under the FN regime.

Table V-10 show the payoffs in the four states at t_2 if L enters renegotiation and information a is carried out under FN regime.

As in the base model, the conditions, for contracts with CR = E and CR = L, respectively, are[25]

$$I = D - px_{t1}^{FN} - (1-p)x - (1-p)(C+N) \tag{36}$$

and

$$I = D + p\,(y - N) \tag{37}$$

The final payoff (Utility) to E for the contracts with CR = E and CR =L are:

$$U_{CR=E}^{E} = R - I + px - px_{t1}^{FN} - (1-p)(C+N) + py + K \tag{38}$$

and

$$U_{CR=L}^{E} = R - I + py - pN \tag{39}$$

Equating the expressions (38) and (39) for the FN regime implies that G $\left(\overline{x^{FN}}\right)$ is given by:

$$\mathrm{G}\left(\overline{x^{FN}}\right) = p(x - x_{t1}^{FN}) - (1-2p)N - (1-p)C + K \tag{40}$$

Where G $\left(\overline{x^{FN}}\right)$ shows the difference between the average firm in the pool $[\bar{x}, \mathrm{b}]$ of firms above $\bar{x}$, and the lowest firm $\bar{x}$ in the pool for the HF regime.

Proposition 7. In the FN regime world, assume that L learns x at time t_1 if there is scope for renegotiation. Then, a PSPBE always exists, and takes the following form:

i. If G $\left(\overline{x^{FN}}\right) > p(x - x_{t1}^{FN}) - (1-2p)N - (1-p)C + K$ for all $\bar{x} \in [a, b]$, then all firms offer CR = L. The promised payment is $D = I - p\,(y - C - N)$.

ii. If G $\left(\overline{x^{FN}}\right) < p(x - x_{t1}^{FN}) - (1-2p)N - (1-p)C + K$ for all $\bar{x} \in [\mathrm{a}, \mathrm{b}]$, then all firms offer CR = E. The promised payment is $D = I + x_{t1}^{FN} + (1-p)(x + C + N)$.

iii. If there exists $\bar{x} \in [\mathrm{a}, \mathrm{b}]$such that G$\left(\overline{x^{FN}}\right) = p(x - x_{t1}^{FN}) - (1-2p)N - (1-p)C + K$ then firms $x \geq \bar{x}$ offers CR = E, while firms $x \leq \bar{x}$ offer CR = L. The promised payments are $D = I + E[x \mid \{x \geq \bar{x}\} S_E \cap \Im_{t1}^{FN}] + (1-p)(x + C + N)$ when CR = E and $D = I - p\,(y - C - N)$ when CR = L.

[25] The cost of preparing the financial statements under the two different accounting regimes does not factor into the indifference curves for L. The cost will have a bearing on the net profit of E and is assumed to be not built into the creation of D.

Since J is atom-less and G is continuous, the condition for case (iii) will be satisfied if we are not in case (i) or in case (ii), and therefore, the three cases in Proposition 7 give the complete space of parameters for the FN regime.

The interpretation of proposition 7 is as follows; the term $p(x - x_{t1}^{FN})$ measures the influence of the information set concerning the expectation of x under the FN regime, that occurs at t_1 and which influences the renegotiation process and the initial allocation of rights.

The terms $(1-2p)N - (1-p)C + K$, measure the additional renegotiation and information acquisition costs that must be undertaken when CR = L instead of CR = E. This total expression is negative if $p < \frac{1}{2}$, which implies lower renegotiation costs under CR = L compared to CR = E when $p < \frac{1}{2}$.

As in Propositions 2 and 3, in case (i) of Proposition 7, all types will choose CR = L. The promised payment being $D = I - p\ (y - C - N)$. The contracted face value of debt will be higher in this case for the FN firm compared to the F firm and similar to the H regime firm due to the requirement on the part of the L to recover the information acquisition costs from the debt.

For Proposition 7 (ii), the decision right will be given to E (CR = E). And the promised payment will be is $D = I + x_{t1}^{FN} + (1-p)(x + C + N)$. Again, the contracted face value of debt will be higher in this case for the FN regime compared to the F regime due to the need to recover the information acquisition cost incorporated in the debt. In this scenario, all such firms will retain the decision rights, that is, no debt covenants (CR = E) will be included in the debt.

As long as $p(x - x_{t1}^{FN}) - (1-2p)N - (1-p)C + K$ does not exceed $G^J \equiv max_x \mathrm{G}(\overline{x^{FN}})$, case (iii) is obtained in proposition 7. In these cases, such lower firms will prefer to give the right to L (CR = L), and the cut off firm is given by $\mathrm{G}(\overline{x^{FN}}) = p(x - x_{t1}^{FN}) - (1-2p)N - (1-p)C + K$. In such a scenario, the FN firm will offer a debt contract with $D = I + E[x \mid \{x \geq \bar{x}\} S_E \cap \Im_{t1}^{FN}] + (1-p)(x + C + N)$ when it retains the right (CR = E) and a contract with a contracted amount of $D = I - p\ (y - C - N)$, when it gives the Lender the decision right (CR = L).

Proposition 7 shows that the FN type firms are more likely to observe a higher cost of debt, when compared to our hypothetical F type firm, which is meant to be a firm that uses FVA in a manner in which the information is constantly updated with no noise and incorporates all relevant information.

The extension's predictions are in line with prior academic research that finds that the Level 2 and Level 3 FVA classifications are more likely to observe noise and are more easily manipulated and include estimates and judgements that are difficult to verify against the market (Platin et al 2008, Demerjian et al 2014, Benson 2008).

6. Empirical Predictions

Our model provides a number of testable implications for debt contracts, most of which are in line with prior literature in this field. In this section, we briefly discuss the testable empirical predictions. In the next chapter, we test these predictions in a sample of private US loans obtained from LPC/Dealscan.

Accounting Regime and Debt covenants: Our first empirical prediction examines the role that the accounting regime plays on the occurrence of debt covenants in contracts. The model looks at two distinct accounting regimes against a backdrop of asymmetric information faced by the Lender. Under the HCA regime, the information set remains static unless the lender pays to acquire information in order to update his information set. Under the FVA regime, the information set is continuously updated and the lender does not need to pay to acquire information. However, the firm bears the full cost of providing the lender with an updated information set.

In deciding on the ex-ante division of the Control rights (presence of the covenants), the Lender looks at the potential costs associated with acquiring the information, as well as the potential renegotiation costs if the contract needs to be amended in the future.

The base model implies that the firm under the FVA regime bears the full cost of providing information to the lender, while the Lender bears no cost but benefits from the improvement in the information set, therefore, the firm is able benefit from a lower amount of covenants compared to an identical firm under HCA.

Our prediction is in line with Liao et al (2013), who suggest that the number of balance sheet covenants should decrease in line with the additional improvement in the information set provided by the borrower.

Covenant Strictness and Accounting Choice: The model implies that the number of the covenants will vary between the two different types of accounting regimes, with FVA firms being offered a lower number of ex ante covenants.

The model implies that the accounting regime choice will lead to different number of covenants issued ex ante. In particular, the model implies that under a FVA regime, the ex-ante probability of receiving a covenant is lower than in the HCA regime. Therefore, all else

equal, there is a higher likelihood of the covenant strictness, as measured by the number of covenants to be lower under FVA.

Loan renegotiations and Accounting Choice: Roberts and Sufi (2009) find that the accrual of new information concerning the credit quality, investment opportunities, and collateral of the borrower, as well as macroeconomic fluctuations in credit and equity market conditions, are the primary determinants of renegotiation and its outcomes. Over 90% of long term debt contracts are renegotiated prior to their stated maturity, and are rarely a consequence of distress or default.

Our model (Propositions 4 and 5) suggests that the trade-off in the costs associated with information acquisition faced by the lender under the two accounting regimes would cause him to be more likely to acquire information earlier (renegotiate) under the FVA compared to the HCA regime.

Debt Yield and Accounting Choice: The model implies that the yield on debt would differ between the two accounting regimes. In our model, the firm bears the full cost of preparing the financial statements under the FVA regime, and the Lender benefits by obtaining the information set on a continuous basis at no cost.

The firm therefore benefits from this improvement in the information set by being able to issue debt at a lower yield compared to an equivalent HCA firm. In the latter case, the lender has a stale information set and needs to spend money in order to obtain updated information. Under the HCA regime, the Lender needs to be compensated ex ante for the information acquisition cost, and this results in a higher yield.

The prediction is in line with Bharath et al (2008), who examine the relationship between interest spreads charged on loans and measures of accounting quality before entering into the loan agreement, and find that accounting quality is associated with lower spreads. We predict that FVA should place a similar role as played by audit on the cost of debt.

Fair Value Classifications and contract design: In the extension to our model, we assume that unlike the FVA regime considered in our base case model, the different FVA classifications may in fact have different effect on the loan's contract design. In the case of the Level 1 classification, the borrower discloses timely information that is easier to verify and confirm against readily available market data (Liao et al, 2013, Ryan 2008), whereas the level 2 and 3 classifications introduce estimates and judgements which make it more difficult to verify the information against observable market data (Demerjian et al, 2014).

Therefore, in our extension, we find that if we consider the level 2 or level 3 classifications, the increased 'noise' in the accounting information would influence the design of the loan contract. In particular, we predict that for the Level 2 and 3 classifications, the ex post number of loan contracts should be higher, and the loan yield should be higher.

Historical cost revaluation and contract design: Basu (1997) and Watts (2003a, 2003b) find that losses reported by management are informative even if they cannot be verified by external parties due to management incentive to prevent disclosure of bad news while gains reported by management are deemed less informative due to management's incentive to report good news. Further, Lafond and Roychowdhury (2008) argue that financial reporting conservatism is one potential mechanism to address agency problems between owners and managers.

Authors also found that *timely loss recognition* is able to increase reliance of accounting information in debt contracts (Nikolaev ,2010) and to reduce the bid-ask spread on traded debt (Wittenberg-Moerman ,2008).

In our model extension, we allow the HCA firm to engage in 'revaluation' ex post and to be in a position to share more up to date information with the lender prior to renegotiation. Under our extension, we show that compared to the HCA firm in our base model, a firm that can revalue is able to observe a lower likelihood of covenants and also a lower cost of debt. These predictions are in line with those found and referenced above.

7. Conclusion

This paper examines the design and renegotiation of covenants in debt contracts under asymmetric information. In particular, we examine the influence of two distinct accounting regimes on the design and renegotiation of covenants. The model has a setting wherein future firm investments are efficient in some states but also result in a transfer from the Lender to the firm. We model symmetric information concerning the efficiency of the investments, however, the firm is better informed about any potential transfers compared to the lender. Information acquisition differs under the two different accounting regimes. Under the FVA regime, the Lender obtains the true realisation of the transfer value prior to the investment being made. However, under the HCA regime, the lender has to acquire this information at a cost.

Given the above setting, we show that the presence of asymmetric information between the firm and the lender, and between the two different accounting regimes leads to the allocation of a greater amount of decision rights (covenants) ex ante to the more uniformed party, which is the lender facing a HCA regime, then would be the case under symmetric information.

The model also suggests that firms that use FVA should be rewarded ex ante by the lender via requiring a lower yield on the debt contracts. Finally, the model suggests that the trade-off between the potential cost savings from delaying information and the potential benefits from acquiring information earlier, results in the lender being more likely to renegotiate under the FVA regime.

We extend the base model and allow for the HCA firm to revalue prior to renegotiation and to share the information with the lender. We show that under this scenario, unlike the HCA firm in the base model, the firm that revalues is able to observe a less ex-ante covenants, and a lower cost of debt.

We also extend our base model and allow for the FVA regime to produce information with noise, which we assume is a proxy for the Level 2 and Level 3 classifications. We are able to show that under the base model, in our extension, the firm will observe a higher number of loan covenants and a higher cost of debt.

Our paper compliments existing literature by incorporating the influence of accounting choice on contract design and renegotiation. In particular, the paper is the first of its type that examines the influence of FVA on debt covenants, initial yield, covenant strictness and renegotiations.

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Appendix: Proofs

Proof of Proposition 1: Proposition 1 is the proposition concerning symmetric information and under symmetric information, we have $x_{t0}^{H} = x_{t0}^{F} = x$.

If $p < \frac{1}{2}$, then L should receive the control rights given that the payoff to L would be greater under the CR=L scenario, $D - x - y \leq D$, where the first term refers to the payoff to L in the case CR=E and the second term refers to the payoff when CR=L. If $p < \frac{1}{2}$, then the bad state is more likely than the good state, as a result, the expected payoff will be greater when CR=L. If

If $p > \frac{1}{2}$, then E should receive the control rights given that the payoff to E would be greater under the CR=E scenario, $R - (D - x) + y \geq R - D$, where the first term refers to the payoff to E in the case CR=E and the second term refers to the payoff when CR=L.

If $p = \frac{1}{2}$, then the two parties should be indifferent between assigning control rights given that both the good and bad state are equally likely. Therefore, costly renegotiation can not be avoided in the Good state by E, nor by L in the Bad State.

Proof of Proposition 2: For Historical Cost firms, if we compare Equations (16) and (17), we can see that if the Lender (L) expects firm types $x_{t0}^{H} \geq \overline{x_{to}^{H}}$ to choose CR = E, then a firm of type x_{t0}^{H} chooses CR = E if and only if we have the following

$$x_{t0}^{H} - \overline{x_{t0}^{H}} - G\left(\overline{x^{H}}\right) \geq p(x - x_{to}^{H}) - (1 - p)C - (1 - 2p)N \qquad \text{(A1)}$$

If we assume that $G\left(\overline{x^{H}}\right) > p(x - x_{to}^{H}) - (1 - p)C - (1 - 2p)N$ for all $\overline{x_{t0}^{H}} \in [a, b]$. Then $\overline{x_{t0}^{H}} = b$ is an equilibrium, since equation (A1) is never satisfied. If however, $G\left(\overline{x^{H}}\right) < p(x - x_{to}^{H}) - (1 - p)C - (1 - 2p)N$ for all $\overline{x_{t0}^{H}} \in [a, b]$, then equation (A1) is satisfied for all x_{t0}^{H} when $\overline{x_{t0}^{H}}$ is set equal to $\overline{x_{t0}^{H}} = a$. As a result, CR = E for all types is an equilibrium.

If, for any $\overline{x_{t0}^{H}}$ for which $G\left(\overline{x^{H}}\right) = p(x - x_{to}^{H}) - (1 - p)C - (1 - 2p)N$, the equation (A1) becomes $x_{t0}^{H} \geq \overline{x_{t0}^{H}}$, which implies that types $x_{t0}^{H} \geq \overline{x_{t0}^{H}}$ choose CR = E and types $x_{t0}^{H} < \overline{x_{t0}^{H}}$ choose CR = L, which are consistent with the expectation of L.

Proof of Proposition 3: For Fair Value firms, if we compare Equations (18) and (19), we can see that if the Lender (L) expects firm types $x_{t0}^{F} \geq \overline{x_{to}^{F}}$ to choose CR = E, then a firm of type x_{t0}^{F} chooses CR = E if and only if we have the following

$$x_{t0}^{F} - \overline{x_{t0}^{F}} - G\left(\overline{x^{F}}\right) \geq -(1-2p)N - K \qquad \text{(A2)}$$

If we assume that $G\left(\overline{x^{F}}\right) > -(1-2p)N - K$ for all $\overline{x_{t0}^{F}} \in [a, b]$. Then $\overline{x_{t0}^{F}} = b$ is an equilibrium, since equation (A2) is never satisfied. If however, $G\left(\overline{x^{F}}\right) < -(1-2p)N - K$ for all $\overline{x_{t0}^{F}} \in [a, b]$, then equation (A2) is satisfied for all x_{t0}^{F} when $\overline{x_{t0}^{F}}$ is set equal to $\overline{x_{t0}^{F}} = a$. As a result, CR = E for all types is an equilibrium.

If, for any $\overline{x_{t0}^{F}}$ for which $G\left(\overline{x^{F}}\right) = -(1-2p)N - K$, the equation (A2) becomes $x_{t0}^{F} \geq \overline{x_{t0}^{F}}$, which implies that types $x_{t0}^{F} \geq \overline{x_{t0}^{F}}$ choose CR = E and types $x_{t0}^{F} < \overline{x_{t0}^{F}}$ choose CR = L, which are consistent with the expectation of L.

Proof of Proposition 4: If we let $J_L\left(\overline{x_{t0}^{H}}\right)$ be the gain to L from renegotiating the debt contract under the Historical Cost regime when CR = L in the good state (state G) with asymmetric information, given that the equilibrium cut-off point is $\overline{x_{t0}^{H}}$. We can also define $J_E\left(\overline{x_{t0}^{H}}\right)$ as the gain to L from renegotiating the debt contract when CR = E.

With full information, L extracts all the surplus from the renegotiation, y, from which, for any $\overline{x_{t0}^{H}} \in [\overline{x_{t1}^{H}}, \overline{x_{t2}^{H}}]$, L makes a net gain from acquiring information that is bounded away from zero. That is, by letting

$$g(\overline{x_{t1}^{H}}, \overline{x_{t2}^{H}}) = y - \max(sup_{\overline{x_t^H} \in \left[\overline{x_{t1}^{H}}, \overline{x_{t2}^{H}}\right]} J_L\left(\overline{x_{t0}^{H}}\right), sup_{\overline{x_t^H} \in \left[\overline{x_{t1}^{H}}, \overline{x_{t2}^{H}}\right]} J_E\left(\overline{x_{t0}^{H}}\right))$$

It holds that $(\overline{x_{t1}^{H}}, \overline{x_{t2}^{H}}) > 0$.

Now if we consider the equilibrium given by $\overline{x_{t0}^{H}}$, that obtains with $C = 0$. If we have $\overline{x_{t0}^{H}} \in (a, b)$ then, by continuity, there must exist $\overline{x_{t1}^{H}}$ and $\overline{x_{t2}^{H}}$ with $a < \overline{x_{t1}^{H}} < \overline{x_{t2}^{H}} < b$ such that an equilibrium for C small enough is given by $\overline{x_{t0}^{H}} \in [\overline{x_{t1}^{H}}, \overline{x_{t2}^{H}}]$. Also, if C is small enough, that is, if $C \leq g([\overline{x_{t1}^{H}}, \overline{x_{t2}^{H}}])$, then C is worth being paid to acquire information by L. If however, we have the case whereby $\overline{x_{t0}^{H}} = a$ when $C = 0$, then $\overline{x_{t0}^{H}} = a$ for positive C as well, and the only condition we require is that $C < y - J_E(a)$. Or, if $0 = G(b) \geq (1-2p)N$, then we only need that $C < y - J_L(b)$.

Finally, when bargaining takes the form of a take-it-or-leave-it offer by L, both J_F and J_L are strictly smaller than y on $(a, b]$, respectively on $[a, b)$, and continuous. For this to occur, we need to identify the conditions that define L's offer.

If we consider the state (L,G), L will ask a further payment u from E in return for the right to take the investment decision. Since E will accept the offer if an only if we have $u \leq \overline{x_{t0}^H} + y$, the expected gain to L is $J_L(\overline{x_{t0}^H}) = max_u J_L(u, \overline{x_{t0}^H})$, with

$$J_L(u, \overline{x_{t0}^H}) = E\left[(u - \overline{x_{t0}^H}) 1_{\left(u \leq \overline{x_{t0}^H} + y\right)} \middle| x < \overline{x_{t0}^H}\right] \quad \text{(A3)}$$

We can see that $J_L(u, \overline{x_{t0}^H})$ is strictly less than y for every $u \in [a, y + \overline{x_{t0}^H}]$, and is weakly negative for u outside $[a, y + \overline{x_{t0}^H}]$. We can also see that $J_L(u, \overline{x_{t0}^H})$ is continuous in u and $\overline{x_{t0}^H}$, whereby its maximal value $J_L(\overline{x_{t0}^H})$ is strictly lower than y and continuous in $\overline{x_{t0}^H}$.

In the case of state (E,B), L offers a payment v to E in return for the control right (CR = L), and E accepts the offer if and only if $v \geq \overline{x_{t0}^H}]$. Then, we have $J_E(\overline{x_{t0}^H}) = max_u J_E(v, \overline{x_{t0}^H})$, with

$$J_F(v, \overline{x_{t0}^H}) = E\left[-(x_{t0}^H + y) 1_{(v < x_{t0}^H)} - v 1_{(v \geq x_{t0}^H)} \middle| x_{t0}^H > \overline{x_{t0}^H}\right] + [x_{t0}^H + y | x_{t0}^H > \overline{x_{t0}^H}].$$
(A4)

The rest of the proof for J_E is similar to the proof for $J_L$above.

Given that we assume that $x_t^F < x_{t0}^F$ and that $C = 0$, it follows that when the results hold for Historical cost accounting, they must also hold for Fair value accounting as well. If we have $\overline{x_{t0}^F} \in (a, b)$ then, by continuity, there must exist $\overline{x_{t+1}^F}$ and$\overline{x_{t+2}^F}$ with $a < \overline{x_{t+1}^F} < \overline{x_{t+2}^F} < b$ such that an equilibrium for $C = 0$ is given by $\overline{x_{t0}^F} \in [\overline{x_{t+1}^F}, \overline{x_{t+2}^F}]$. This implies that the $\overline{x_{t1}^F}$ under fair value based accounting is lower and as a result, L will have a greater likelihood of negotiating as long as we have $0 \leq g(\overline{x_{t+1}^F}, \overline{x_{t+2}^F})$. If however, we have the case whereby $\overline{x_{t0}^F} = a$ when $C = 0$, then the only condition we require is that $0 < y - J_E(a)$. Or, if $0 = G(b) \geq (1 - 2p)N$, then we only need that $0 < y - J_L(b)$

Proof of Proposition 5: In proposition 5, the left hand side of the equations represent the costs savings from delaying acquiring information at time t for a Historical accounting firm, while the right hand side represents the gains from renegotiating early. L will only acquire information at time t, if the cost saving of acquiring is lower than the gain.

$$C + min(p, 1 - p)\, N[pJ(x_{t0}^H) + (1 - p)(1 - J(x_{t0}^H))] \leq (C + N)[pJ(x) + (1 - p)(1 - J(x))] \quad \text{(A5)}$$

$$(C+N)\left[pJ(x)+(1-p)\left(1-J(x)\right)\right]-(C+min(p,1-p)\,N[pJ(x_{t0}^{H})+(1-p)(1-J(x_{t0}^{H})])\geq 0 \quad \text{(A6)}$$

Proof of Proposition 6: For Historical Cost firms, if we compare Equations (30) and (31), we can see that if the Lender (L) expects firm types $x_{t0}^{H} \geq \overline{x_{to}^{H}}$ to choose CR = E, then a firm of type x_{t0}^{HF} chooses CR = E if and only if we have the following

$$x_{t0}^{H}-\overline{x_{t0}^{H}}-G\left(\overline{x^{HF}}\right)\geq p(x-x_{to}^{H})-(1-2p)N+(1-p)K \quad \text{(A7)}$$

If we assume that $G\left(\overline{x^{HF}}\right)>p(x-x_{to}^{H})-(1-2p)N+(1-p)K$ for all $\overline{x_{t0}^{H}}\in[a,b]$. Then $\overline{x_{t0}^{H}}=b$ is an equilibrium, since equation (A1) is never satisfied. If however, $G\left(\overline{x^{HF}}\right)<p(x-x_{to}^{H})-(1-2p)N+(1-p)K$ for all $\overline{x_{t0}^{H}}\in[a,b]$, then equation (A1) is satisfied for all x_{t0}^{H} when $\overline{x_{t0}^{H}}$ is set equal to $\overline{x_{t0}^{H}}=a$. As a result, CR = E for all types is an equilibrium.

If, for any $\overline{x_{t0}^{H}}$ for which $G\left(\overline{x^{HF}}\right)=p(x-x_{to}^{H})-(1-2p)N+(1-p)K$, the equation (A7) becomes $x_{t0}^{H}\geq\overline{x_{t0}^{H}}$, which implies that types $x_{t0}^{H}\geq\overline{x_{t0}^{H}}$ choose CR = E and types $x_{t0}^{H}<\overline{x_{t0}^{H}}$ choose CR = L, which are consistent with the expectation of L.

Proof of Proposition 7: For Fair Value firms, if we compare Equations (38) and (39), we can see that if the Lender (L) expects firm types $x_{t0}^{F}\geq\overline{x_{to}^{F}}$ to choose CR = E, then a firm of type x_{t0}^{F} chooses CR = E if and only if we have the following

$$x_{t0}^{F}-\overline{x_{t0}^{F}}-G\left(\overline{x^{FN}}\right)\geq p(x-x_{t1}^{FN})-(1-2p)N-(1-p)C+K \quad \text{(A8)}$$

If we assume that $G\left(\overline{x^{FN}}\right)>p(x-x_{t1}^{FN})-(1-2p)N-(1-p)C+K$ for all $\overline{x_{t0}^{F}}\in[a,b]$. Then $\overline{x_{t0}^{F}}=b$ is an equilibrium, since equation (A2) is never satisfied. If however, $G\left(\overline{x^{FN}}\right)p(x-x_{t1}^{FN})-(1-2p)N-(1-p)C+K$for all $\overline{x_{t0}^{F}}\in[a,b]$, then equation (A2) is satisfied for all x_{t0}^{F} when $\overline{x_{t0}^{F}}$ is set equal to $\overline{x_{t0}^{F}}=a$. As a result, CR = E for all types is an equilibrium.

If, for any $\overline{x_{t0}^{F}}$ for which $G\left(\overline{x^{FN}}\right)=-(1-2p)N-(1-p)C+K$, the equation (A8) becomes $x_{t0}^{F}\geq\overline{x_{t0}^{F}}$, which implies that types $x_{t0}^{F}\geq\overline{x_{t0}^{F}}$ choose CR = E and types $x_{t0}^{F}<\overline{x_{t0}^{F}}$ choose CR = L, which are consistent with the expectation of L.

VI. Paper 3: 'Debt design and Fair Value Accounting: Covenant occurrence, covenant intensity, loan amendments, and cost of debt'

1. Introduction

This paper examines the changes in the use of covenants, the cost of debt, the strictness of loan covenants, and the number of ex-post loan amendments in US private loan contracts surrounding the implementation of SFAS 159. Prior to the adoption of SFAS 159, under US GAAP, firms were allowed to report some assets using Fair Value Accounting (FVA). The passage of SFAS 159 allowed firms to expand the use of fair value estimates, particularly for non-financial firms. Since lenders usually write covenants in debt contracts using accounting based information, the expansion of FVA poses important questions. In particular, do the new standards related to FVA, change the usefulness of accounting information for debt contracting purposes? If that is the case, how do lenders behave to the adoption of FVA disclosure by the borrower?

The traditional view on debt covenants as stated in Jensen and Meckling (1976) suggests that covenants are meant to control agency problems by restricting managerial activities that may expropriate wealth from debt holders. In practise, covenants are constructed in a variety of accounting ratios (Leftwich, 1983, Dichev and Skinner, 2002). However, little theoretical or empirical work exists on the influence of FVA on the construction of debt covenants, the cost of debt, the strictness of the covenants, and the number of ex-post loan amendments.

In our theoretical paper, we introduce and extend the Garleanu and Zwiebel (2009) model and incorporate the possibility that FVA may be used by the firm. We motivate the use of FVA as a mechanism that the borrower can use to mitigate the asymmetric information faced by the lender. We show that compared to a firm that uses Historical Cost accounting (HCA), a firm that uses FVA, should observe a lower number of covenants included in the loan contract and that the cost associated with the loan for the FVA firm should be lower. It should be noted that in our theoretical model, we assume that FVA behaves in the manner that the FVA Level 1 classification is expected to behave in, and in subsequent extensions, we relax this assumption to allow noise to enter into the information set.

In this paper, we use the predictions developed from the model in our theoretical paper and examine the influence of the recently introduced FVA standards on a sample of US based private loan contracts and the influence of the change in accounting policy on loan covenants, the cost of the loan, loan contract strictness (as measured by the Covenant

Intensity Index) and the number of ex-post loan amendments. The paper contributes to the literature on creditor control rights, debt contract design, and accounting policy effect.

We approach the influence of fair value accounting from the Costly Contracting Hypothesis (CCH) framework of Jensen and Meckling (1976) and treat the introduction of FVA as a change in the information set available to the lender. In particular, we argue that FVA improves the information set available to the lender, when compared to non-FVA firms. The FVA standards once adopted, force the firm to periodically revalue its applicable assets and liabilities to observable market metrics and prices, and to disclose the information to outsiders. As a result, FVA should reduce the flexibility available to managers to pursue accounting strategies or policies that would create 'noise' in financial statements, and therefore improve the contracting ability of covenants written on these financial statements.

Based on the projected reduction in the information asymmetry resulting from FVA, our first prediction is that the Level 1 FVA classification should observe a lower number of Balance sheet covenants, and that it should have no influence on the number of Income Statement and Non-financial covenants. We predict that the Level 3 classification should observe a lower number of Income statement covenants. Our second prediction builds on the first prediction and argues that the improvement in the information set and verification of values in the financial statements should result in a decrease in the cost of debt (yield spread and loan fees) for the Level 1 classification. Our third prediction builds on the first prediction and argues that the reduction in the occurrence and number of covenants, added to the improvement in the information set under the FVA regime should lead to a decrease in the covenant intensity index. Our last hypothesis builds on our earlier hypothesis and argues that if the Level 1 classification leads to an improvement in the information set for the lender, it should result in an increase in the number of ex-post loan amendments.

We test our predictions on a sample of US private loan contracts obtained from LPC/Dealscan, and we find mixed results that support some of our predictions. Overall, our results are consistent with evidence found by other papers. For example, Demerjian et al (2014) argue that FVA may result in a reduction in the contracting ability of the financial information, especially, the level 2 and 3 classifications, which they and Liao et al(2013) argue is more 'noisy' and may include more 'biased judgements' compared to the Level 1 classifications. Our results suggest that the Level 1 classification results in a reduction in the number of Balance sheet covenants and an associated reduction in the Cost of debt, whereas the Level 3 classification results in a reduction in the number of Income Statement covenants, but with no associated reduction in the Cost of debt We also find that the Level

2 classification observes a reduction in the ex-post number of amendments, which in accordance with Roberts and Sufi (2009), may imply a reduced accrual of new, relevant information. Therefore, our results are generally consistent with those found earlier, that is, we find that the Level 1 classification is deemed to be more 'value relevant' to lenders compared to the Level 3 classification.

We partition our dataset into two groups according to the median initial loan maturity and find some support for Platin et al's (2008) suggestion that FVA leads to the greatest potential damage when claims are long lived, though we argue that this may be less related to the Level 1 classification.

We also conduct a number of robustness tests on our data and the results provide strong support for (H1), but mixed support for the hypothesis associated with cost of debt (H2), the covenant intensity index (H3), and the number of ex-post loan amendments (H4).

Section 2 presents the related literature that underpins and develops our empirical predictions. Section 3 presents our methodology and data. Section 4 describes our univariate analysis and main empirical results. Section 5 presents our robustness analysis. Section 6 summarizes our main results and concludes.

2. Related literature and Hypothesis development

The Costly Contracting Hypothesis (CCH), as articulated by Jensen and Meckling (1976), views the firm as a centre of contracts made between the firm and its various stakeholders. Under the CCH theory, managers/insiders will, at times, pursue strategies that benefit themselves at the expense of outsiders. Outside investors will anticipate the potential for wealth expropriation and will 'price-protect' themselves by offering a lower price for a given ownership claim. Insiders bear these costs and therefore have an incentive to mitigate these costs. Insiders are able to mitigate these costs by entering into monitoring and bonding agreements and providing timely information to outsiders. Smith and Warner (1979) argue that if the CCH is correct, then we should observe restrictions (covenants) written into debt contracts.

Besides covenants authors have found several other mechanisms that can be employed to protect bondholders. Prior studies have examined State anti-takeover laws (Francis et al. 2010), the influence of political and legal institutions (Qi et al ,2010), the use of audit as a monitoring mechanism (Minnis ,2011), and Board independence and board structure (Anderson et al, 2004), amongst others.

Accounting can have two roles in debt contracting: an information role and a direct contracting role. In the informational role, the lender uses accounting information in the initial contracting of the loan. The accounting information allows the lender to determine the likelihood of default and the potential loss given default (Amiram, 2011), and the associated loan price. The Accounting information will also allow the lender to engage in loan renegotiation (Roberts and Sufi, 2009).

Debt covenants written on accounting ratios allocate control rights to the lender in the event of poor financial performance (Aghion and Bolton, 1992). Other provisions sometimes written on accounting variables include dividend restrictions (Kalay, 1982; Li et al, 2013), performance pricing provisions (Asquith et al, 2005), and cash flow sweeps.

The direct contracting role of accounting relates to contract provisions written explicitly on accounting values. Covenants written on accounting ratios allocate control rights to the lender in the event of poor financial performance (Aghion and Bolton, 1992, Leftwich ,1983, Dichev and Skinner ,2002).

Information asymmetry between the borrower and lender makes it difficult for the lender to assess the profitability of the firm's investment opportunities. If the lender cannot adequately asses the firm's profitability, it will under-price the firm's projected profitability and over-price firms with low profitability, which may potentially lead to market failure. This is the "lemons problem" introduced by Akerlof (1970), and it leads to incentives for borrowers to disclose additional information to the lender in order to mitigate the potential 'lemons problem'.

In order to mitigate the information asymmetry being faced by lenders, borrowers may attempt to use *Conservatism*. [26] Basu (1997) and Watts (2003a, 2003b) find that losses reported by management are informative even if they cannot be verified by external parties due to management incentive to prevent disclosure of bad news while gains reported by management are deemed less informative due to management's incentive to report good news. Further, Lafond and Roychowdhury (2008) argue that financial reporting conservatism is one potential mechanism to address agency problems between owners and managers.

[26] "Conservatism" occurs when a higher degree of verification is required for gains compared to losses, that is, firms recognise losses in a timely manner, but delay the recognition of gains.

However, Gigler et al (2009) and Gow (2008) suggest that conservatism may reduce the efficiency of debt contracts due to debt contracts being designed differently in accordance with the conservatism of the accounting system.

Moving away from conservatism, authors find that *timely loss recognition* is able to increase reliance of accounting information in debt contracts (Nikolaev 2010) and to reduce the bid-ask spread on traded debt (Wittenberg-Moerman 2008).

FVA, also referred to as "Marked-to-market", is an accounting regime wherein the firm is required to periodically revalue its assets and liabilities to match the securities to their observable market values (Level 1), or to use observable market values of a similar type of security (Level 2), or to provide observable valuation inputs for securities that do not have verifiable market values (Level 3). Under a FVA regime, the firm will be required to revalue its assets and liabilities on each reporting date, and therefore, disclose any gains or losses due to the revaluation in the financial statements.[27]

In terms of the use of FVA, Barth (1994) finds that FVA estimates are relevant to investors, but that the change in FVA is less relevant, compared to the HCA method. Fiechter (2011) finds that the FVA option is able to reduce the volatility of bank's earnings. Further, Laux and Leuz (2009) argue that though there are legitimate concerns surrounding marking to market in times of financial crises, it is less clear that these problems apply to FVA as stipulated under either US GAAP or IFRS. They further argue that HCA is not a remedy and that there are a number of concerns surrounding HCA and that these problems could be larger than those associated with FVA.

Authors have also raised concerns about the potential damage done by FVA when assets are illiquid or long lived, (Platin et al,2008, Demerjian et al, 2014, Benson, 2008). The argument mainly stems from a concern that fair values not based on actual market prices will be costly to apply, and that fair values levels 2 and 3 could be easily manipulated and are not easily verifiable.

Further, research shows that FVA disclosures may only provide a limited incremental information value relevance role (Eccher et al, 1996), that debt contracts may be less likely to include financial covenants affects by FVA (Demerjian ,2011, Ball et al ,2013).

The main alternative to FVA is "historical Cost" accounting (HCA), where assets are recorded at historical cost, which normally equals the fair value when the assets were

[27] The exact disclosure of the gain/loss will differ depending on whether the security is classified as "Trading securities", "Available for Sale", or "Held-to-Maturity".

originally bought. Thereafter, historical cost is adjusted for amortization and impairments, but any asset value increases are only recorded if the asset is sold. When asset values decline and impairment is not restricted, FVA and HCA should provide the same value. However, in practise, the impairment test differs across assets. Furthermore, whether or not the value of an impaired asset is written down and the loss is recognised in the income statement depends on the asset in question and whether the impairment is deemed as being not 'temporary' (Laux and Leuz, 2010).

If FVA under SFAS 159 makes accounting information more (less) useful in the direct contracting role, lenders could increase (decrease) their use of financial covenants in debt contracts (Ball et al, 2013; Demerjian, 2011). Alternatively, lenders could modify contract definitions of financial covenants to adjust for the effects of SFAS 159 (Leftwich, 1983; Li, 2010, Demerjian et al, 2014). Furthermore, market values may capture information that is uninformative for debt contracting, such as temporary shocks unrelated to the borrower's future cash flows (Shivakumar, 2013). Kothari et al (2010) and Benson (2008) argue that the use of FVA also grants managers increased reporting discretion, particularly for Level 2 and Level 3 assets, and that this increase discretion could lead to reporting opportunism. However, Liao and Beatty (2014) find that the three level hierarchy under SFAS 157 provides investors with useful information.

Our hypothesis are derived from our theoretical paper, wherein we examine the design and renegotiation of covenants in debt contracts under asymmetric information. In particular, we examine the influence of two distinct accounting regimes on the design and renegotiation of covenants. Our model has a setting wherein future firm investments are efficient in certain states but also result in a transfer from the lender to the firm. The model has symmetric information concerning the efficiency of the investments, however, the firm is better informed about any potential transfers compared to the lender. Under the FVA regime, we assume that the lender obtains the true realisation of the potential wealth transfer value prior to the investment being made. However, under a HCA regime, the lender has to acquire this information at a cost.

Given the above setting, we are able to show that the presence of asymmetric information between the firm and the lender, and between the two distinct accounting regimes leads to the allocation of a greater number of control rights (covenants) ex ante to the more uniformed party, which is the lender facing a HCA regime, then would be the case under symmetric information. The model also suggests that firms that use FVA should be rewarded ex ante by the lender via requiring a lower yield on the debt contracts. In the extension to our model,

we also show that the expected influence of FVA should differ depending on the FVA level classification, with Level 1 expected to reduce information asymmetry, while Level 3 is expected to introduce noise for the lender.

Dichev (2008) discusses two alternative approaches to financial statement reporting. The "balance sheet approach" uses the valuation of assets and liabilities as the main focal point of financial reporting. Under the balance sheet approach, income statements are a function of the changes in the relevant balance sheet accounts and therefore, are determined on a secondary basis. Under the "income statement approach", the determination of income and expenses are the primary goal of the financial reporting. Under this method, the balance sheet accounts are determined by the income statement accounts.

'A major standard-setting initiative related to the balance sheet approach is the use of fair value accounting'.[28] Demerjian (2011) finds that the use of balance sheet covenants has decreased over time, while he finds that the inclusion of income statement based covenants has remained constant. He argues that this phenomena has arisen due to the increased use of FVA and the inclusion of estimated assets and liability values, which he argues has reduced the use of balance sheet covenants.

Unlike Demerjian (2011) and Ball et al (2013), we assume that if FVA is able to reduce the amount of information asymmetry faced by the lender, then the lender should offer the borrower a contract with a lower number of Balance Sheet covenants. While Demerjian (2011) and Ball et al (2013), take the opposite view, that if an accounting information set is able to reduce information asymmetry, then the lender should offer the borrower with more or atleast the same number of covenants written on that accounting set, a reduction would imply that the information set actually increases the degree of information asymmetry being faced by the lender under Demerjian (2011) and Ball et al (2013).

Our assumption is derived from the Costly Contracting Hypothesis (CCH) (Jensen and Meckling (1976)). Under this theory, outside investors will anticipate the potential for wealth expropriation and will 'price-protect' themselves by offering a lower price for a given ownership claim. Insiders are able to mitigate these costs by entering into monitoring and bonding agreements and providing timely information to outsiders. Therefore, in our theoretical model, we assume that the borrower mitigates the costs by using FVA and thereby providing more timely information to outsiders. Accordingly, the use of FVA will be

[28] Page 181, Demerjian (2011).

rewarded by the lender in the form of a lower need for balance sheet covenants and a lower yield spread.

This argument is also supported by Denis and Wang (2014) who find that debt contract renegotiations represent an important vehicle by which creditors exercise control rights in a state contingent manner, and that creditors exercise these control rights in a flexible manner, often providing more slack to borrowers to allow them to implement their preferred operating policies.

Our argument is also supported by Nikolaev (2010), who examines the relationship between conservative financial reporting and the extent of covenant use in public debt. He argues that covenants and the degree of timely loss recognition act as complementary mechanisms for reducing agency costs. Bharath et al (2008) argue that lender's restrictions on the borrower's actions through covenants can act as substitutes for high quality accounting information.

Our model therefore predicts that the use of FVA should result in a lower number of balance sheet covenants if, as expected in our model, that FVA use leads to an improvement in the information set. Our expectation concerning the influence of FVA on Balance Sheet covenants is supported by Laux and Leuz (2009), who say 'FVA is a way to measure assets and liabilities that appear on a company's balance sheet' (p 827). Our expectation is further supported by Liao et al (2013), who find that the degree of information asymmetry for bank's net assets is an increasing function of fair value estimate level; that is, information asymmetry is highest for the level 3 classification and lowest for the level 1 classification. Similar to Demerjian (2011), we do not expect the inclusion of Income Statement covenants to be affected by the use of FVA (as a whole). Our expectation regarding the lack of influence of FVA is based on the determination of FVA as being part of the 'balance sheet approach' (Demerjian, 2011). We do not expect a reduction in Non-financial covenants arising from the use of FVA. Non-financial covenants are normally not written on financial statement information, and therefore, are not expected to be directly influenced by the choice of accounting standards being followed.

However, we do not expect the influence of FVA on covenants to be uniform, rather, we expect the Level 1 classification to have the strongest (most beneficial) influence on covenants, followed by the Level 2 and the Level 3 classifications. Our predictions are based on our theoretical model and support from Liao et al (2013), which suggests that the number of balance sheet covenants should decrease in line with the additional improvement in the information set provided by the borrower. In the case of the Level 1 classification, the borrower discloses timely information that is easier to verify and confirm against readily

available market data (Liao et al, 2013, Ryan 2008, Beaver and Venkatachalam, 2003), whereas the level 2 and 3 classifications introduce estimates and judgements which make it more difficult to verify the information against observable market data (Demerjian et al, 2014). Under our null hypothesis, we would expect the FVA loan observations, especially loans with Level 1 assets to observe a lower number and occurrence of balance sheet loan covenants, followed by the Level 2 and Level 3 classifications.

We further predict that if the Level 3 classification introduces 'noise' and 'biased judgements' as argued by Liao et al (2013), and Demerjian et al (2014), then it may result in a reduction in the contracting ability of the financial information and therefore, result in a lower number of Income Statement covenants. While we expect the Level 1 classification to reduce the number of Balance sheet covenants, and the Level 3 classification to reduce the number of Income statement covenants, the expected reason is not the same for the lender. With Level 1, the lender is predicted to find the information relevant and therefore, agrees to reduce the number of Balance sheet covenants. Whereas, in the Level 3 scenario, the lender reduces the number of Income statement covenants because he is less able to use the information for contracting purposes. If this prediction concerning the lender's approach between the Level 1 and the Level 3 classifications is true, we would expect the lender to reward the Level 1 classification with a lower cost of debt, and to ask for a higher cost of debt for the Level 3 classification.

However, it is also possible that the use of FVA may result in a reduction in the usefulness of accounting information and that the lender would respond to this by writing a lower amount of loans covenants. Demerjian (2011) finds a decline in covenants written on balance sheet values which he attributes to a decline in the contracting usefulness of the balance sheet due to changing accounting standards. Under the alternative hypothesis, if the use of FVA leads to a reduction in the contracting ability of accounting information, then, firms that use FVA should observe a lower number of Balance sheet covenants. Under our null hypothesis:

Hypothesis 1a: The occurrence and number of Balance Sheet covenants is negatively related to the use of Fair Value accounting.

Hypothesis 1b: The Level 1 Fair Value classification should result in a reduction in the occurrence and number of Balance Sheet covenants, while the Level 3 classification is expected to have no effect on the number and occurrence of Balance sheet covenants.

Hypothesis 1c: The Level 1 Fair Value classification should have no impact on the occurrence and number of Income Statement covenants, while the Level 3 classification is expected to reduce the number and occurrence of Income Statement covenants

Hypothesis 1d: The occurrence and number of Non-financial covenants is unaffected by the use of Fair Value accounting.

According to Jensen and Meckling (1976), under the CCH, covenants are incorporated in debt contracts as a means to protect lenders from wealth expropriation activities undertaken by the insiders. These activities could include unauthorised distributions to insiders, claim dilution, asset substitution ('over-investment'), or 'under-investment' amongst other possible actions.

Smith and Warner (1979) argue that under certain circumstances, a set of covenants that are meant to curtail potential wealth expropriation by insiders, would reduce the promised yield to lenders. Bradley and Roberts (2003, 2004) find a negative relation between the promised yield on corporate debt and the presence of covenants.

Bharath et al (2008) examine the relationship between interest spreads charged on loans and measures of accounting quality before entering into the loan agreement, and find that accounting quality is associated with lower spreads. They also find that accounting quality has a relatively larger effect on interest rates in public rather than private markets, which they argue is in line with either private market lender's access to the additional information beyond publicly available information, or their ability to more cost effectively monitor the borrower and place restrictions on the borrower's actions.

According to our theoretical paper, we hypothesis that the use of FVA will result in the reduction of the level of information asymmetry faced by the lender. The lender therefore requires a cost of debt (where cost relates to both the yield spread on the loan, and any 'fees' associated with the loan) on the loan compared to a similar loan that does not use FVA. Furthermore, we assume that the level 1 classification will provide the lender with the highest marginal improvement in the informational asymmetry he faces, therefore, the level 1 classification will observe the highest reduction in the cost of debt followed by the level 2 and 3 classifications.

However, if FVA reduces the efficiency of debt contracting (Demerjian, 2011; Ball et al (2013), then FVA usage should result in an increase in the yield spread. This argument is based on the CCH, which suggests that if the lender is not able to write contracts (covenants) in the loan that are efficient due to the reduction in the contractibility of accounting

information under FVA, he will price-protect himself by asking for a higher cost of debt compared to an identical firm that does not use FVA.

Hypothesis 2a: The promised cost of debt on a loan contract is expected to be negatively influenced by the use of Fair Value accounting.

Hypothesis 2b: The Level 1 Fair Value classification should be negatively related to the promised cost of debt.

Smith and Warner (1979) argue that 'there is a unique optimal set of financial contracts which maximise the value of the firm', therefore, covenant choice is attributed to the particular features of the given project. Berlin and Mester (1992), Billet et al (2007), Rauh and Sufi (2010), and Demiroglu and James (2010) argue that on average, riskier firms receive contracts with stricter covenants.

Berlin and Loeys (1988) find that debt contracts with covenants based on noisy indicators of the firm's financial condition tend to be either too harsh or too lenient. They argue that the firm's choice reflects the optimal trade-off between the agency costs associated with hiring a delegated monitor and the inefficiency of inadequate bond covenants.

Dichev and Skinner (2002) find that private lenders set debt covenants tightly and use them as 'trip wires' for borrowers, and that technical violations occur relatively often, but that violations are not necessarily associated with financial distress.

According to our preceding hypothesis concerning the effect of FVA on covenants, we predict that the number of covenants would decrease for a FVA firm. Therefore, if we measure loan contract strictness using the number of covenants as an input, then this measure should show a decrease for a firm using FVA. Secondly, if we assume that contract strictness is a mechanism used by lenders to mitigate the possibility of wealth expropriation by the borrower and is set in order to reduce the flexibility allowed to the borrower to engage in activities that may transfer wealth, given our preceding arguments on FVA being used as a mechanism to reduce the information asymmetry faced by the lender, we would expect that the lender would offer a lower level of loan contract strictness to the firm (measured by the number of covenants issued in the loan), if the firm uses FVA. We further predict that the Level 1 classification should have the greater influence on the magnitude of the effect on loan contract strictness, given our preceding arguments concerning the higher marginal benefit the level 1 classifications gives to the lender compared to the level 2 and 3 classifications.

Hypothesis 3a: Loan contract strictness is negatively influenced by the use of Fair Value accounting.

Hypothesis 3b: The Level 1 Fair Value classification should have a greater reduction on the level of loan contract strictness.

Roberts and Sufi (2009) find that the accrual of new information concerning the credit quality, investment opportunities, and collateral of the borrower, as well as macroeconomic fluctuations in credit and equity market conditions, are the primary determinants of renegotiation and its outcomes. Over 90% of long term debt contracts are renegotiated prior to their stated maturity, and are rarely a consequence of distress or default.

The transfer of control rights and lender monitoring through covenants that act as trip wires is closely linked to contract renegotiations (Berlin and Mester, 1992; Garleanu and Zwiebel, 2009). However, the alignment of shareholder and lender's interest should reduce the requirement for future contract renegotiations (Aghion and Bolton, 1992).

Under a FVA regime, information concerning the values of assets and liabilities is constantly updated, this would allow the lender to be in a better position to obtain information concerning the credit quality, investment opportunities, macroeconomic factors, and any other factors compared to a HC regime. Therefore, Loan contract renegotiations are expected to be positively influenced by the degree of timeliness of accounting information, in particular, contract renegotiations are expected to be positively influenced by the degree of timeliness of the accounting information set in terms of the recognition of gains and losses.

In terms of FVA classification, we expect the Level 1 classification to have a positive influence on the number of loan renegotiations. We base our prediction on the expectation that the level 1 classification will offer the lender new information concerning the valuation inputs used to value the level 1 securities; information that the lender is be able to verify against the market. Therefore, if the level 1 classification does contain new, relevant information concerning the loan contract that the lender may find useful, then the level 1 classification should observe a positive relationship with the number of loan amendments. We predict that the Level 3 classification would have the opposite effect to that of Level 1, this prediction arises from the managerial judgements and estimates used in valuing the Level 3 securities by the firm which may be difficult to reconcile to observable market data. This may introduce managerial bias in the information, which the lender may discount similar to his incorporation of information from HCA.

Hypothesis 4a: Loan contract renegotiations are positively related to the use of Fair Value accounting.

Hypothesis 4b: The Level 3 Fair Value classification should have a negative impact on the number of loan contract renegotiations.

3. Methodology and Data

i. Measurement

A. Fair Value

The focus of this paper is to examine the influence of FVA on the occurrence and number of covenants in private debt contracts, the strictness of those covenants, the number of ex-post loan amendments, and the cost of debt. As a result, the starting point of our methodology is to identify whether a loan observation is either FVA or HCA based.

For the purpose of our research, we use Statement of Financial Accounting Standards No 157 and 159 (SFAS 157 and 159) as the fair value standards in our paper. These standards became effective for all fiscal years beginning November 2007 and it set the definition of fair value, fair value measurement, disclosure policy and hierarchy of assets and liabilities (level 1, 2 and 3). Fair value standards existed prior to this standard, for example SFAS 115 for marketable securities, SFAS 122 for mortgage servicing rights, SFAS 133 for hedging transactions, to name a few. However, SFAS 157 and 159 were introduced to provide clear guidance for the consistent application of fair value across a broad range of assets and liabilities.

The FASB states 'Prior to this Statement, there were different definitions of fair value and limited guidance for applying those definitions in GAAP. Moreover, that guidance was dispersed among the many accounting pronouncements that require fair value measurements. Differences in that guidance created inconsistencies that added to the complexity in applying GAAP'[29]

With the introduction of SFAS 157 and 159, firms that made use of FVA, were required to disclose in their financial statements the use of the standards and to recognise gains and losses from applying fair value and to separately disclose the gains and losses. Prior to SFAS 157 and 159, any gain or loss would not be disclosed separately in the financial statements and would form part of the Accumulated Other Comprehensive Income (AOCI), therefore, making it practically impossible to determine whether a firm was using FVA prior to SFAS 157 and 159, and what if any, the resulting fair value gain or loss was. As a result, we exclude

[29] Summary of Statement No.157, Reason for Issuing this Statement. www.fasb.org

all observations prior to the first quarter of 2008 due to the inability to determine whether the firm was using some form of FVA prior to this date.

Under a FVA regime, gains or losses arising from Marking-to-market assets and liabilities, will be incorporated either on the face of the Income Statement, the Balance sheet, or the Statement of Comprehensive Income. We use COMPUSTAT/CRSP to identify whether a given loan observation exhibits any transactions associated with FVA. The three data items associated with FVA from the COMPUSTAT/CRSP dataset are: Assets Level 1 (AQPL1), Assets level 2 (AQL2), and Assets Level 3 (AUL3). Level 1 assets relate to a firm's assets that have a quoted market value. Level 2 assets relate to a firm's assets for which there is an observable market value for similar instrument types. Level 3 assets relate to a firm's assets for which there is no observable market value, nor are there observable market values for similar types of instruments.

Next, we code Level 1, 2 and 3 fraction of assets as follows:

$$Level\ 1\ \% = \frac{(Level\ 1\ assets)}{(Total\ assets)}$$

$$Level\ 2\ \% = \frac{(Level\ 2\ assets)}{(Total\ assets)}$$

$$Level\ 3\ \% = \frac{(Level\ 3\ assets)}{(Total\ assets)}$$

The numerator is the respective asset amount for each FVA classification, while the denominator is the total asset position of the firm for the period.

Table VI-1: Fair Value classifications and percentages: Sample compared to Population

	N	Mean	Median	10%	25%	75%	90%
Pop FVA1%	58,297	0.1244	0.0377	0.0001	0.0046	0.1546	0.3779
Sample FVA1%	1,993	0.0558	0.0158	0.0010	0.0035	0.06936	0.1499
Pop FVA2%	56,805	0.1408	0.0489	0.0001	0.0036	0.2043	0.4302
Sample FVA2%	2,043	0.0349	0.0058	0.0000	0.0012	0.0258	0.0908
Pop FVA3%	25,957	0.0629	0.0074	0.0004	0.0017	0.0318	0.1255
Sample FVA3%	790	0.5759	0.0187	0.0039	0.0002	0.0134	0.0386

Table VI-1 above shows the percentage of total assets represented by the FVA classifications. The population rows relate to the corresponding ratios calculated using all non-financial firm quarter observations for US firms using data from COMPUSTAT/CRSP from Q1 2008 to Q4 2013. The sample percentages correspond to the corresponding ratios calculated using the financial data applying to the sample being used.

Our hypothesis rely on FVA having an effect on covenant design and loan contract issuance, therefore, we require that our classification for FVA should reflect the 'materiality' of using FVA (Demerjian et al, 2014). That is, we need to ensure that we code those firms as being FVA users, which have a higher proportion of assets affected by the new regulation.

Therefore, we use the **median** value of the corresponding population ratio for each classification as the cut-off value for coding each classification. That is, we will code an observation as using level 1,2, or 3, if it is above the population median.

We use the population median as the classification methodology because our sample is a sub-sample that is constructed by using the Chava and Roberts (2008) linking file. The linking file allows us to link the Dealscan loan data to the financial statement data in COMPUSTAT/ CRSP, however, the link is not complete and it only allows us to link less than a fifth of all Dealscan data.[30] Therefore, to avoid using a sample median as the cut-off mechanism, which may be biased due to the limitations in collating the data, we use the population median.

Table VI-2: Loan observations by Accounting Type

Quarter	Total	HC	FV	FV1	FV2	FV3
2008q1	174	173	1	1	0	0
2008q2	181	158	23	15	8	13
2008q3	181	157	24	14	8	9
2008q4	136	98	38	18	14	19
2009q1	118	85	33	19	12	10
2009q2	134	91	43	23	17	23
2009q3	109	87	22	15	8	8
2009q4	151	109	42	33	6	19
2010q1	121	86	35	23	8	11
2010q2	176	125	51	35	14	12
2010q3	162	123	39	31	9	9
2010q4	231	174	57	41	18	14
2011q1	197	146	51	36	18	6
2011q2	291	227	64	48	18	13
2011q3	245	179	66	52	23	10
2011q4	265	202	63	46	21	11
2012q1	170	123	47	37	16	11
2012q2	204	156	48	35	14	7
2012q3	149	113	36	26	14	8
2012q4	203	158	45	30	18	8
2013q1	155	118	37	32	15	3
2013q2	229	177	52	31	25	8
2013q3	285	152	33	26	12	7
2013q4	195	154	41	35	14	5
Total	**4,362**	**3,371**	**991**	**702**	**330**	**244**

Table VI-2 above shows the number of loan contract observations by quarter, split according to whether they have been coded as using HCA or FVA. The observations are further broken down between Level 1 (FVA1), Level 2 (FVA2), and Level 3 (FVA3) classifications.

[30] There are 29,501 loan observations for the 2008q1 to 2013q4 period, of which only 4,362 have been collated with the linking file (14.7%).

Next we examine the relationship between the use of FVA, including the various FVA classifications. We run the following regression.

$$Occurrence_i = \alpha + \beta_1 MAT + \beta_2 LEV + \beta_3 SIZE + \beta_4 Deal\ AMOUNT + \beta_5 Secured + \beta_6 Switching + \beta_7 Zscore + \beta_8 LOSS + \beta_9 RATING + \varepsilon_i$$

Where Occurrence is a binominal variable that takes the form 1 if the loan quarter observation has a FVA, or Level 1,2, or 3 observation or 0 otherwise. We run a Logit regression with year fixed effects and clustered by Firm. The results from the regression are shown in Table VI-3 below.

Table VI-3: Fair Value Accounting use, Firm and Loan characteristics

VARIABLES	(1) FV_ occurrence	(2) FV1_ occurrence	(3) FV2_ occurrence	(4) FV3_ occurrence
WMAT	0.027	0.250	-0.228	-0.151
	(0.210)	(1.570)	(-1.245)	(-0.637)
WLEV	-0.807**	-0.974**	-1.380**	-1.378**
	(-2.148)	(-2.145)	(-2.018)	(-2.343)
WSIZE	0.326***	0.327***	0.434***	0.257***
	(7.352)	(6.339)	(5.656)	(3.546)
WAMOUNT	-0.167***	-0.238***	-0.116	-0.077
	(-4.150)	(-4.996)	(-1.633)	(-1.052)
SECURED	0.132	0.098	0.065	0.135
	(1.325)	(0.852)	(0.370)	(0.842)
Switching	1.051***	0.692***	0.539*	0.933***
	(4.951)	(2.865)	(1.775)	(3.126)
WZScore	0.022	0.015	0.037	-0.093**
	(1.092)	(0.650)	(1.238)	(-2.141)
LOSS	0.588***	0.338**	0.813***	0.285
	(4.076)	(2.022)	(3.355)	(1.180)
Rating	-0.275**	-0.277*	-0.348	-0.325
	(-2.022)	(-1.874)	(-1.637)	(-1.185)
Constant	-2.566***	-2.719***	-4.325***	-4.019***
	(-6.487)	(-5.891)	(-6.590)	(-5.709)
Observations	4,362	4,362	4,362	4,362
Year FE	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES
Pseudo R2	0.0565	0.0540	0.0762	0.0531

Table VI-3 above shows the relationship between the occurrence of FVA observations shown in (1). The occurrence of Level 1 classification (2). The occurrence of the Level 2 classification (3). Finally, (4) shows the occurrence of the Level 3 classification. WMAT is the natural log of maturity at the time of issuance. WLEV is the ratio of total long term debt (dlttq) to total assets (atq). Size is the natural log of market value (mkvalq). Amount is the natural log of the deal amount. Secured is a binomial variable equal to 1 if the loan quarter states that the loan is secured, 0 otherwise. Switching is a binomial variable equal to 1 if the firm switched to Fair Value accounting in the prior period, 0 otherwise. Zscore is the bankruptcy measure constructed using Altman's (1968) measure. Loss is a binary variable equal to 1 if the firm reported negative operating earnings (oiadpy<0), 0 otherwise. Rating is a binary variable equal to 1 if the firm had a credit rating (obtained from S&P), 0 otherwise. The control variables Maturity, Leverage, Size, Amount, and Zscore have been winsorized at the 0.005 level. Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

As can be seen from

Table VI-3 above, the occurrence of FVA is negatively related to the level of firm leverage, which suggests that firms are less likely to use FVA if they have a higher proportion of debt to total assets. The Size of the firm has a positive impact on occurrence, suggesting that larger firms are more likely to use FVA. Amount is negatively related to FVA use,

suggesting that larger deal sizes are less likely to be associated with the use of FVA. Switching is positively associated with FVA, suggesting that if a firm had used FVA in the prior period, that it would be more likely to use FVA in the subsequent period. The ZScore is negatively related to the use of the level 3 classification. Loss is positively associated with the use of FVA, suggesting that firms that experience a loss in the current period are more likely to use FVA, expect for the use of the level 3 classification. Finally, the Rating classification has a negative relationship with FVA and the level 1 classification, suggesting that the presence of an existing firm level rating reduces the occurrence of the level 1 and FVA. The Maturity and Secured variables were not found to be significant.

Overall, the logit regression suggests that FVA use is less likely to occur if the firm is already highly levered and is issuing a large loan amount. However, it is more likely to use FVA if it is a larger firm.

B. Covenant

Our first hypothesis examines the influence of FVA on covenant occurrence. LPC/Dealscan provides data on financial covenants, which are provisions within the debt contract whereby the borrower must maintain a prescribed threshold amount of an accounting based measure. If the borrower is unable to maintain the prescribed threshold in a given period, the loan will enter into technical default and the lender will receive the option to take remedial action, such as the termination of the loan via immediate repayment, a renegotiation of the loan's maturity or interest rate, or the payment of a penalty amount to the lender. Transactions are reported at the Package and Facility level in DealScan/LPC, where packages are collections of facilities with linked documentation. Covenants are only reported at the package level, therefore, this is the relevant unit of observation for a contract (Murfin 2012). We examine three types of covenants:

Balance Sheet covenants include:

- *Current ratio* is the ratio of current (short term) assets to current liabilities.
- *Quick ratio* is the ratio of current assets less inventory to current liabilities.
- *Debt to tangible assets* is the ratio of total debt to total tangible assets.
- *Leverage ratio* is the ratio of total debt to total share-holders equity.
- *Max CAPEX* is the maximum amount of capital expenditure allowed in a given period.
- *Tangible Net Worth* is the minimum amount of tangible assets less liabilities allowed in a given period.
- *Net Worth* is the minimum amount of total assets less total liabilities allowed in a given period.

Income Statement covenants include:

- *Interest coverage* is the ratio of earnings to interest expense.
- *Fixed charge coverage* is the ratio of earnings to fixed expenses including interest, principal payments, and others.
- *Debt to EBITDA* is the ratio of total debt to earnings before interest, tax, depreciation, and amortisation.
- *Debt coverage* is the ratio of the current portion of debt to earnings.
- *Senior debt to EBITDA* is the ratio of senior debt to earnings before interest, tax, depreciation, and amortisation.
- *EBITDA* is the minimum amount of earnings before interest, tax, depreciation, and amortisation allowed in a given period.

Non-Financial covenants include:

- *Asset Sweep* is a restriction on the sale and/or the use of proceeds from the sale of certain assets.
- *Debt Sweep* is a restriction on the issuance of new debt or the use of proceeds from the issuance of new debt.
- *Equity Sweep* is a restriction on the issuance of new equity or the use of proceeds from the issuance of new equity.
- *Dividend Sweep* is a restriction on the issuance of dividends.
- *Insurance Sweep* is a restriction on the proceeds from insurance claims.

Table VI-4 below shows the summary statistics of the type of covenant and the loan quarter observations obtained from the dataset. We do not make predictions on the inclusion or exclusion of individual covenant types, rather, we focus on whether FVA leads to a significant difference in the inclusion or exclusion of Balance Sheet, Income Statement and Non-Financial covenants.

Table VI-4: Summary of covenants by type

Type of covenant	**Firm year observation**
Balance Sheet	1,502
Income Statement	3,791
Non-Financial Covenant	4,075
Individual covenant observations	
Max Capex	477
Min EBITDA	166
Max Debt to EBITDA	1,605
Max Debt to Equity	5
Max Debt to Tangible Net Worth	57
Max Leverage Ratio	407
Max Loan to Value	1
Max Net Debt to Assets	0
Max Senior Debt to EBITDA	179
Max Senior Leverage	1
Min Cash Interest Coverage	19
Min Current Ratio	164
Min Debt Service Coverage	66
Min Equity to Asset	3
Min Fixed Charge Coverage	841
Min Interest Coverage	1,000
Min Net Worth to Total Assets	0
Min Quick Ratio	24
Min Net Worth	144
Min Tangible Net Worth	134
Asset Sweep	797
Debt Sweep	634
Equity Sweep	382
Dividend Sweep	1,640
Insurance Sweep	622

Table VI-4 above shows the number of loan covenants, split according to whether they are classified as being either Balance Sheet, Income Statement, or Non-financial in nature. The loan covenants are then further broken down according to the individual loan definition.

For hypothesis 1, we use two different tests in order to examine the influence of FVA on covenant inclusion in loan contracts. We first examine whether FVA use leads to a difference in the occurrence of covenants in the loan contract. Secondly, we examine whether the use of FVA results in a difference in the number of covenants included in a particular loan. We cluster by Firm and include Year Fixed Effects, whereby the dependent variables are the occurrence of Balance Sheet, Income Statement, or Non-Financial covenants, or the number of Balance Sheet, Income Statement, or Non-Financial covenants:

$$CONVENANT_i = \alpha + \beta_1 FVA + \beta_2 MAT + \beta_3 LEV + \beta_4 SIZE + \beta_5 Deal\ Amount + \beta_6 Secured + \beta_7 Switching + \beta_8 Zscore + \beta_9 Loss + \beta_{10} Rating + \varepsilon_i$$

The dependent variable, COVENANT corresponds to one of two measures. It is either a binomial variable equal to 1 if the observation has Balance Sheet, Income Statement, or Non-Financial covenants, or 0 otherwise (Test 1). Or, it is the number of Balance Sheet, Income Statement, or Non-Financial covenants per loan contract (Test 2). The FVA variable is a binary variable equal to 1 if the loan observation has been coded determined as being a FVA observation (see above). In subsequent regressions this variable is replaced by the Level 1, Level 2, and Level 3 observations.

The figures below show HCA observations with square markers, total observations with a triangle markers, and FVA observations with a straight line. For the purpose of the graphs, we show the sample into two groups based on whether the firm uses FVA or uses HCA.

Figure VI-1: Balance Sheet Covenants Occurrence 2008-2013.

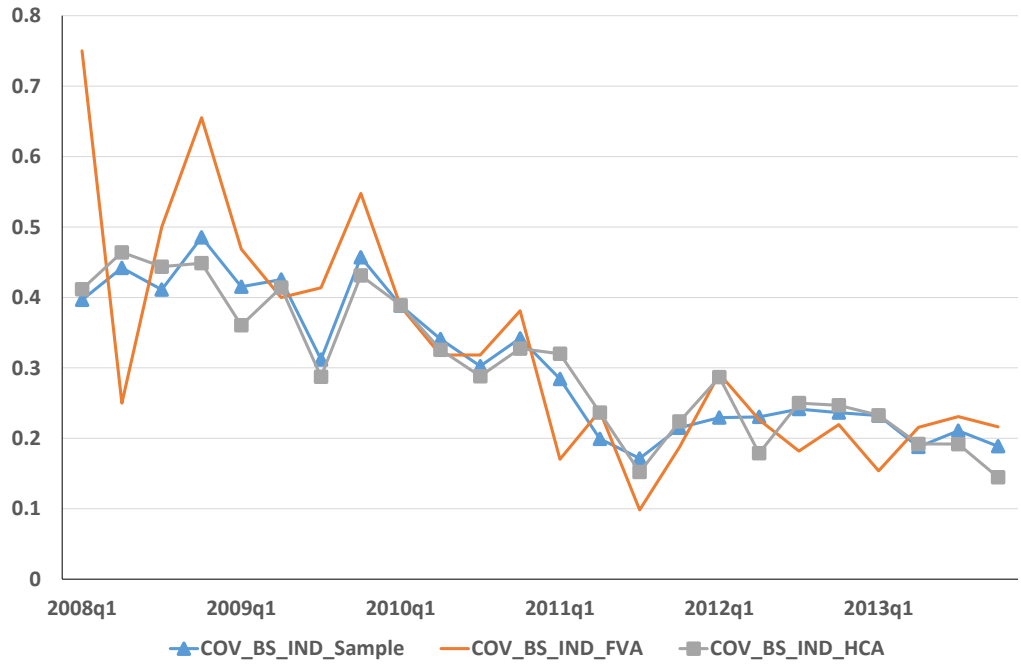

Figure VI-1 above shows the occurrence of Balance Sheet covenants in loan contracts during the period 2008-2013. As can be seen from the above figure, the occurrence of Balance Sheet covenants has steadily decreased over the period. As can also be seen from Figure VI-1, FVA observations have generally exhibited a lower occurrence of Balance Sheet covenants during the period compared to HCA.

Figure VI-2: Income Statement Covenants Occurrence 2008-2013

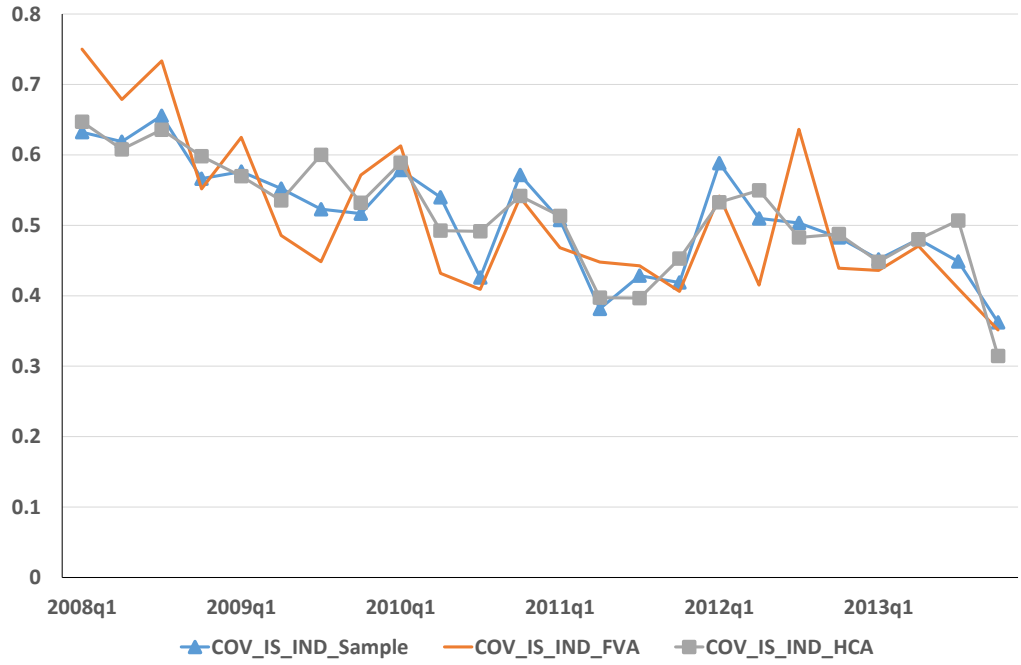

Figure VI-2 above shows the occurrence of Income Statement covenants in loan contracts during the period 2008-2013. As can be seen from the above figure, the occurrence of Income Statement covenants has steadily decreased over the period. As can be seen from Figure VI-2, FVA observations have generally exhibited a similar occurrence of Income Statement covenants compared to HCA observations over the period.

Figure VI-3: Non-Financial Covenants Occurrence 2008-2013

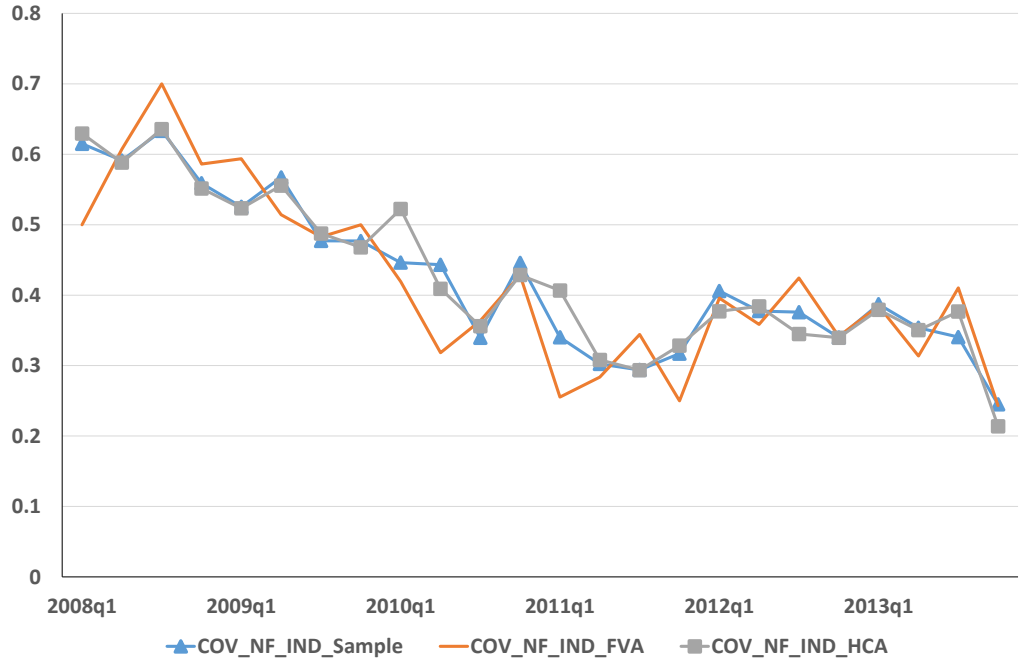

Figure VI-3 above shows the occurrence of Non-Financial covenants in loan contracts during the period 2008-2013. As can be seen from the above figure, the occurrence of Non-Financial

covenants has steadily decreased over the period. As can be seen from Figure VI-3, FVA observations have generally exhibited a similar occurrence of Non-Financial covenants compared to HCA observations over the period.

Figure VI-4: Number of Balance Sheet covenants per loan contract 2008-2013

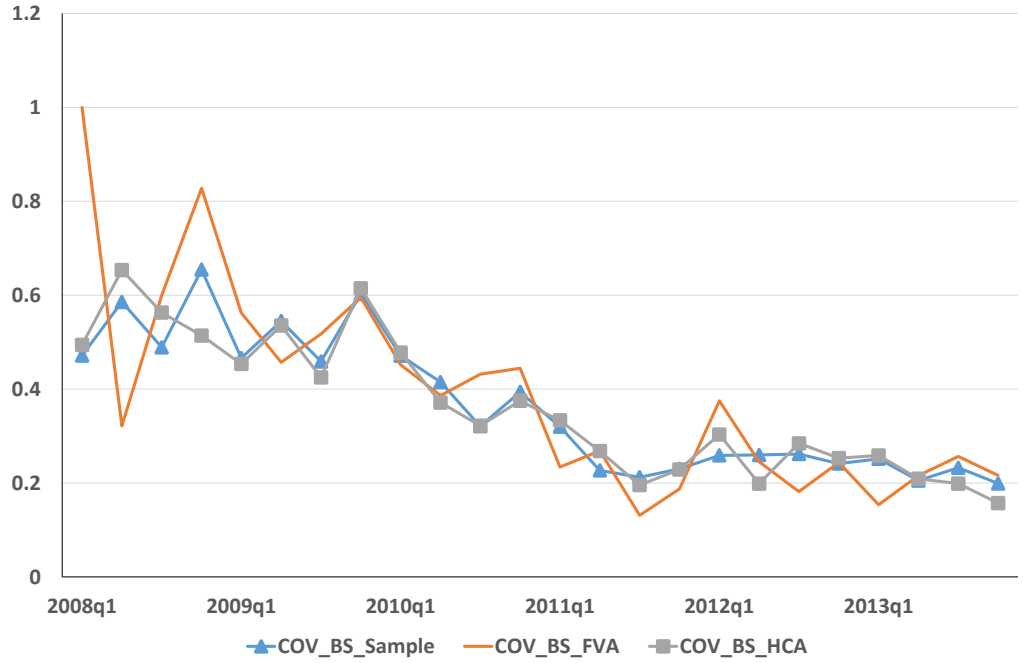

Figure VI-4 above shows the number of Balance Sheet covenants per loan contract during the period 2008-2013. As can be seen from the above figure, the number of Balance Sheet covenants has steadily decreased over the period. As can be seen from Figure VI-4, FVA observations have generally exhibited a lower number of Balance Sheet covenants compared to HCA observations over the period.

Figure VI-5: Number of Income Statement covenants per loan contract 2008-2013

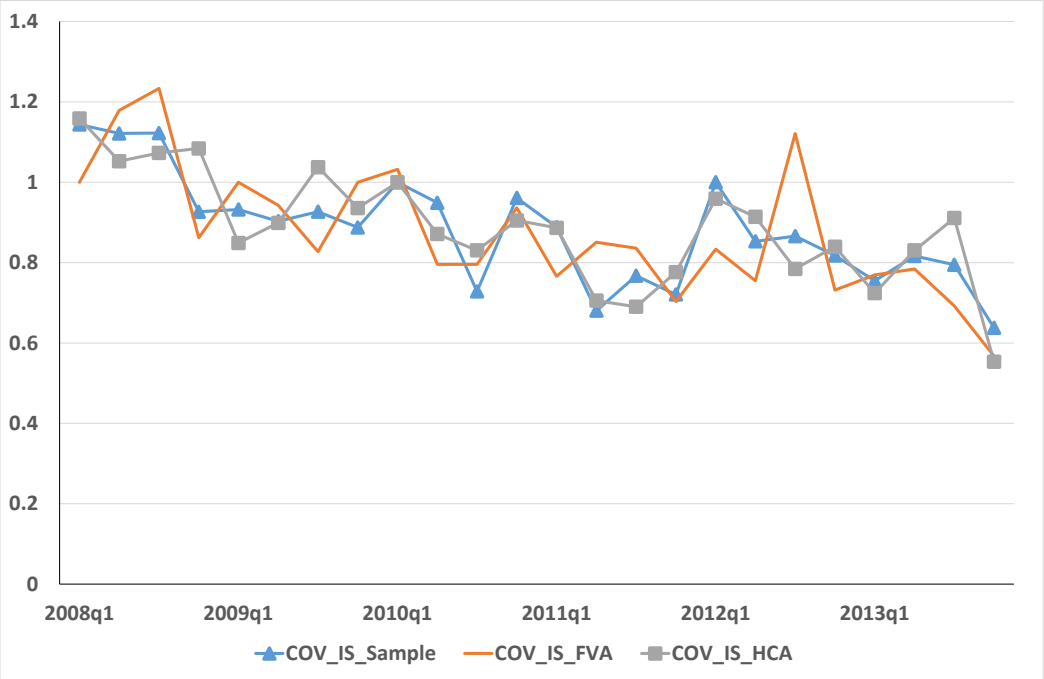

Figure VI-5 above shows the number of Income Statement covenants per loan contract during the period 2008-2013. As can be seen from the above figure, the number of Income Statement covenants has steadily decreased over the period. As can be seen from Figure VI-5, FVA observations have generally exhibited a similar number of Income Statement covenants compared to HCA observations over the period.

Figure VI-6: Number of Non-Financial covenants per loan contract 2008-2013

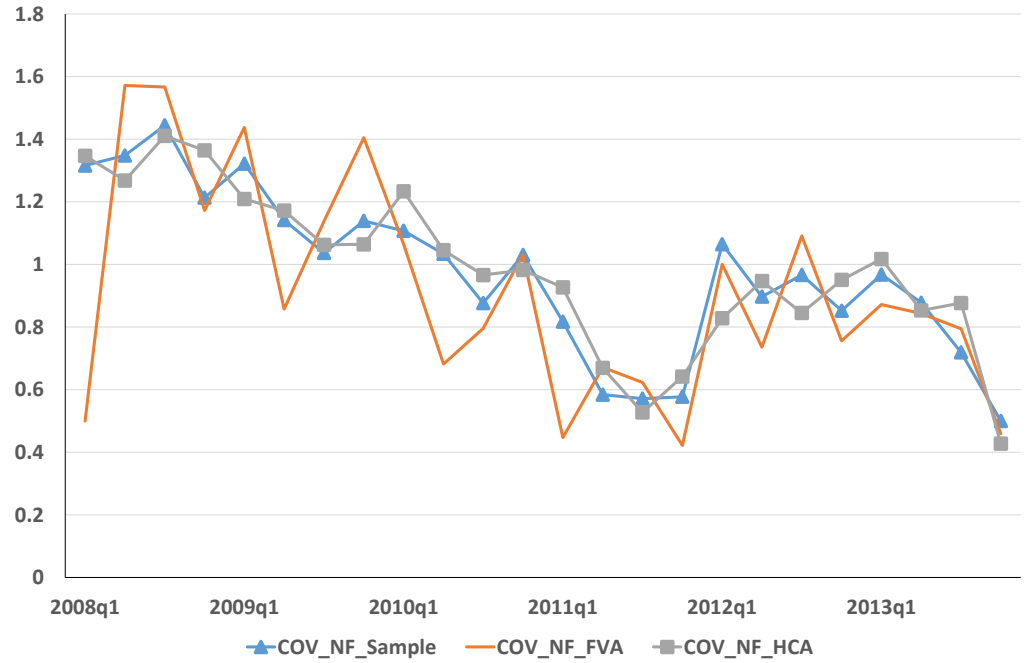

Figure VI-6 above shows the number of Non-Financial covenants per loan contract during the period 2008-2013. As can be seen from the above figure, the number of Non-Financial

covenants has steadily decreased over the period. As can be seen from Figure VI-6, FVA observations have generally exhibited a lower number of Non-Financial covenants compared to HCA observations over the period.

C. Cost of debt

The second hypothesis examines whether the Cost of debt is influenced by the use of FVA. The cost of debt is obtained from the Current Pricing dataset from LPC/Dealscan. This dataset gives details about the pricing of each of the Packages, including the respective benchmark rate and the associated spread over the benchmark, from which we can construct the Yield Spread, and any respective upfront fees charged on the issuance of the loan. We run separate regressions on the Yield Spread and any fees of the loan as follows:

$$Yield\ Spread_i = \alpha + \beta_1 FVA + \beta_2 MAT + \beta_3 LEV + \beta_4 SIZE + \beta_5 Deal\ Amount + \beta_6 Secured + \beta_7 Switching + \beta_8 Zscore + \beta_9 Loss + \beta_{10} Rating + \beta_{11} COV\_BS + \beta_{12} COV\_IS + \beta_{13} COV\_NF + \varepsilon_i$$

$$FEES_i = \alpha + \beta_1 FVA + \beta_2 MAT + \beta_3 LEV + \beta_4 SIZE + \beta_5 Deal\ Amount + \beta_6 Secured + \beta_7 Switching + \beta_8 Zscore + \beta_9 Loss + \beta_{10} Rating + \beta_{11} COV\_BS + \beta_{12} COV\_IS + \beta_{13} COV\_NF + \varepsilon_i$$

Figure VI-7: Yield Spread 2008-2013

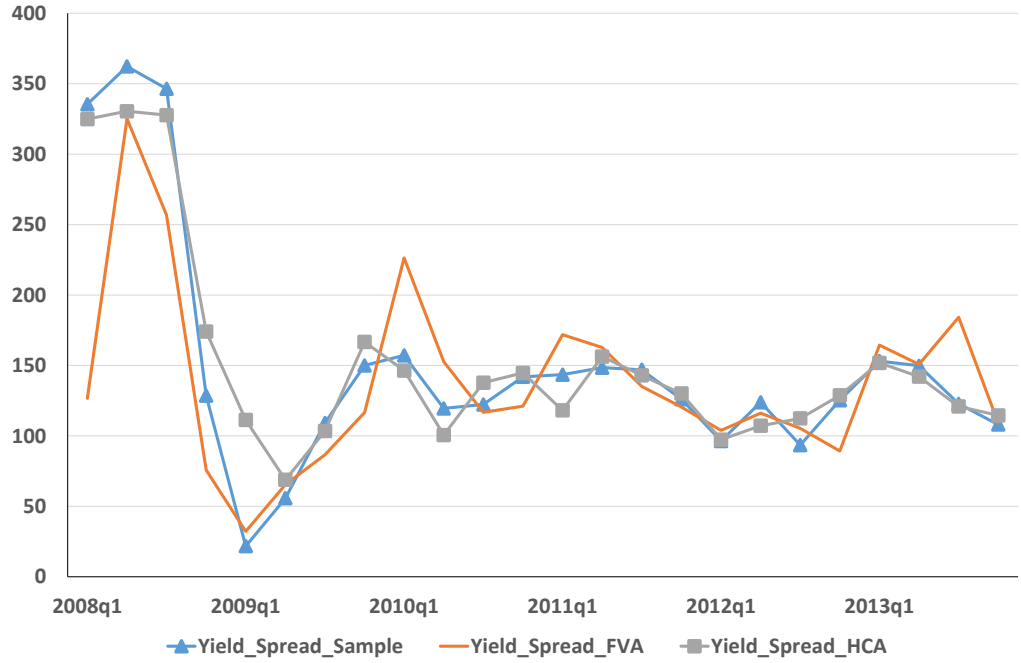

Figure VI-7 above shows the Yield spread during the period 2008-2013, where the y-axis shows the average Yield spread in basis points (bps). As can be seen from the figure, the average spread has steadily increased during the period 2008-2013, after a large fall between 2008q3 and 2009q1. As can be seen from Figure VI-7, FVA observations have generally exhibited a similar Yield Spread compared to HCA observations over the period.

Figure VI-8: FEES 2008-2013

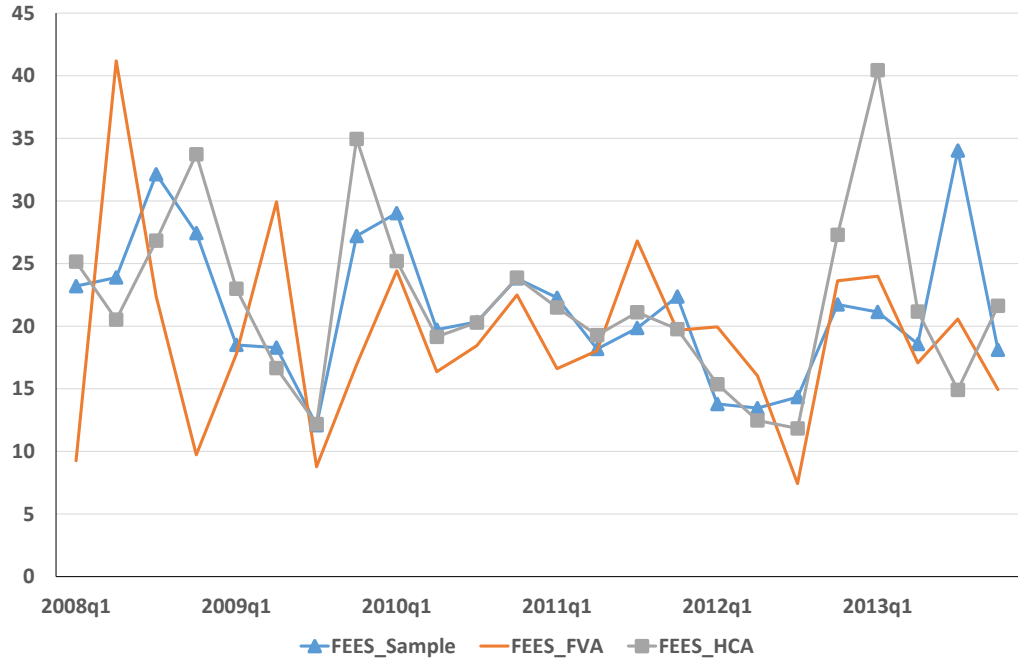

Figure VI-8 above shows the Loan fees during the period 2008-2013, where the y-axis shows the average loan fee in basis points (bps). As can be seen from the figure, the average spread has been very volatile during the period 2008-2013. As can be seen from Figure VI-8, FVA observations have generally exhibited a lower fee trend compared to the HCA observations during the 2009-13 period.

D. Covenant Intensity Index

We conduct our analysis of the degree of covenant strictness by using the *Covenant Intensity Index* introduced by Bradley and Roberts (2004). The index has been designed in order to measure the degree to which a particular loan restricts the actions of a firm's management. Similar to Bradley and Roberts (2004), we assume that more covenants place greater restrictions on the management of the borrowing firm. We follow Bradley and Roberts (2004), and approximate the covenant intensity of each issue by the number of covenants included in the debt contract. The index is constructed using six specific covenants, which fall into four groups: prepayment, financial, dividend and secured.

The prepayment group includes covenants that require the earlier repayment of the loan conditional on an event, such as the issue of further debt or equity. These covenants are referred to as 'sweeps' in the Dealscan dataset and consist of three distinct types: asset, equity, and debt. Sweeps are normally stated as a percentage, which refer to the amount of the loan that must be repaid earlier in the case of a covenant violation.

Financial covenants have already mentioned above and consists of the sum of the Balance Sheet and Income Statement covenants mentioned above. Dividend covenants are meant to restrict the ability of management to distribute cash to its equity-holders if certain events occur. Dividend covenants are shown in Dealscan in a binary code, with 1 implying that a dividend covenant exists, while 0 implies that the debt contract does not contain a dividend covenant. Finally, Secured covenants exist in order to restrict the ability of management to distribute the collateral against which the debt has been secured. Secured covenants are shown in the Dealscan dataset as a binary variable.

We construct the covenant intensity index by following the methodology introduced by Bradley and Roberts (2004). We code the Asset, Debt and Equity Sweeps, Secured, and Dividend covenants as 1 if the debt contract has any of these covenants in place. We code the Financial covenant element as 1 if the debt contract has two or more financial covenants in the debt contract.

This results in a covenant index that ranges in value from 0 to 6 for individual loan contracts, where a value of 0 implies that the debt contract has a lower amount of restriction, while a value of 6 implies that the debt contract has a higher amount of restriction in place.

We follow Bradley and Roberts (2004) and argue that even though the covenant intensity benchmark implicitly assumes that the impact of different covenants is the same, this construction is transparent and is easy to replicate. Further, the benchmark also allows us to avoid any judgement regarding the efficiency or likely wealth effects of any of the covenants.

We run the following regression:

$$Covenant\ Intensity_i = \alpha + \beta_1 FV + \beta_2 MAT + \beta_3 LEV + \beta_4 SIZE + \beta_5 Deal\ Amount + \beta_6 Secured + \beta_7 Switching + \beta_8 Zscore + \beta_9 Loss + \beta_{10} Rating + \varepsilon_i$$

Figure VI-9: Covenant Intensity Index 2008-2013

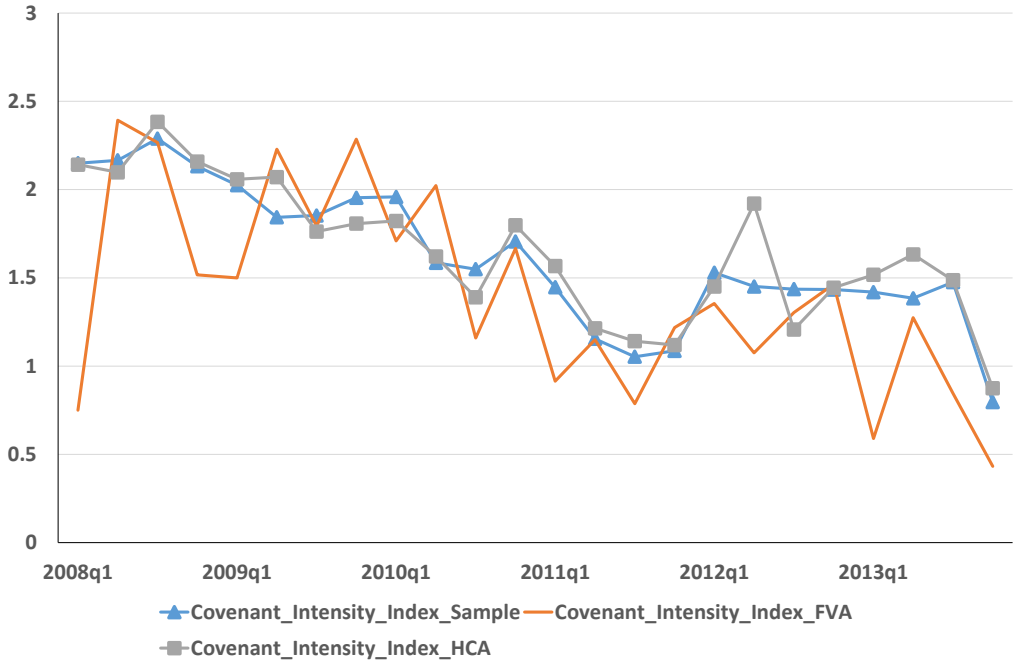

Figure VI-9 above, shows the performance of covenant intensity index during the 2008-2013 period. The y-axis shows the Covenant Intensity benchmark value constructed using Bradley and Roberts (2004). As can be seen from Figure VI-9, the Covenant Intensity Index has generally decreased over the period 2008-2013. As can be seen from Figure VI-9, FVA observations have generally exhibited a lower magnitude for the Covenant Intensity Index compared to HCA observations over the period.

Murfin (2012) states that any measure for covenant strictness should have four desirable properties. First, the measure should take into account the number of covenants included in a contract. Second, the measure should be able to capture the initial covenant slack.[31] Third, the measure should be able to incorporate the scale of the contracted slack. Finally, the measure should be able to incorporate the covariance between the covenants.

As a consequence, the Covenant Intensity Index of Bradley and Roberts (2004) could be said to suffer from a weakness due to its reliance on only the first desirable property mentioned by Murfin (2012), while ignoring the other three desirable properties. Therefore, the measure that we use for covenant strictness has flaws which should be kept in mind when reviewing the analysis. However, the strengths of the Bradley and Roberts (2004) measure is its ease of construction and replication, the avoidance of any weight placed on particular types of covenants, and the use of both financial and non-financial covenants in its construction. The

[31] Slack is defined as the distance between the borrower's accounting numbers at the time the contract is written and what is allowed under the loan covenants.

Bradley and Roberts (2004) measure has been used in existing literature including Nikolaev (2010), and Christensen and Nikolaev (2012), amongst others.

E. Loan Contract Amendments

Our final hypothesis examines whether the number of amendments in a loan contract is influenced by the use of FVA. The number of loan amendments is obtained from the Deal Amendments dataset from LPC/Dealscan. This dataset gives details about any amendments that have taken place for each loan, including any change in maturity, loan amount or a change in the cost of debt. We run the following basic regression:

$$Amendments_i = \alpha + \beta_1 FVA + \beta_2 MAT + \beta_3 LEV + \beta_4 SIZE + \beta_5 Deal\ Amount + \beta_6 Secured + \beta_7 Switching + \beta_8 Zscore + \beta_9 Loss + \beta_{10} Rating + \varepsilon_i$$

Where the dependent variable is the number of ex-post loan amendments on a given loan. As mentioned previously, our hypothesis is that FVA should have a positive impact on the number of loan amendments.

Figure VI-10: Number of loan Amendments 2008-2013

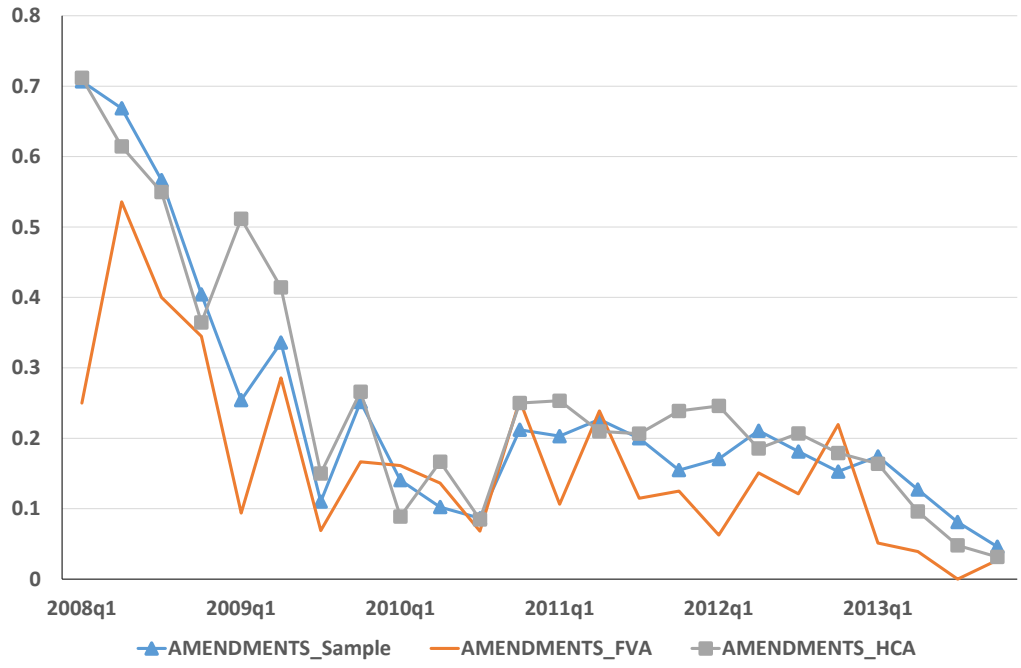

Figure VI-10 above shows the average number of ex-post amendments made to a loan contract during the period 2008-2013. The y-axis shows the number of loan amendments, where a higher number suggests that a loan contract had a higher number of ex-post loan amendments and a lower number implies that the contract has a lower number of ex-post loan amendments. As can be seen from the figure, the number of loan amendments appear to be decreasing during the period, with the ex-post number of amendments for FVA based loans being generally lower than those for HCA loans during the period.

Table VI-5 below shows the summary statistics for the dependent variables mentioned above.

Table VI-5 : Summary statistics of dependent variables

Variable	N	Mean	Median	10%	25%	75%	90%
COV_BS_IND	4,362	0.2914	0	0	0	1	1
COV_IS_IND	4,362	0.5039	1	0	0	1	1
COV_NF_IND	4,362	0.4104	0	0	0	1	1
COV_BS	4,362	0.3443	0	0	0	1	1
COV_IS	4,362	0.8691	1	0	0	2	2
COV_NF	4,362	0.9342	0	0	0	1	4
Yield Spread	4,362	152.439	62	10	25	243	461
Fees	4,362	21.367	0	0	0	12.5	65
Total Debt cost	4,362	173.807	89	15	35	283	505.95
Covenant Intensity Index	4,362	1.5608	1	0	0	3	5
Amendments	4,362	0.2362	0	0	0	0	1

Table VI-5 : Summary statistics of dependent variables: above shows the dependent variables used in the paper. COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. Fees is the upfront loan costs asked in originating a loan. Total Debt cost is the addition of the Yield Spread and the Fees on loan issuance. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract.

ii. Data

The financial covenant and loan data consists of 4,362 private debt agreements made to publicly traded, non-financial borrowers obtained from the LPC/Dealscan database. Dealscan reports loan details from syndicated and bilateral loans collected from lead arrangers and SEC filings from 1984 to 2014. Included in the loan details are covenant levels, details about the borrower, loan amendments, and terms of the loans including pricing and maturity. Our sample covers the period 2008 to 2013. Quarterly financial statement data is obtained from COMPUSTAT/CRSP. Loan data is matched to COMPUSTAT data by using a link file provided by Michael Roberts and Sudheer Chava (which is also used in Chava and Roberts (2008)).

Transactions are reported at the package and facility level in Dealscan, where packages are collections of facilities with linked documents. Given that covenants are only reported at the package level, this is the relevant measure used for a contract. We consolidate the loan amount at the package level and only include one observation per package level.

Table VI-6: Control variables descriptive statistics.

	N	Mean	Median	10%	25%	75%	90%
WMAT	4,362	1.5454	1.791759	0.693147	1.386294	1.791759	1.791759
WLEV	4,362	0.2473	0.221452	0	0.089841	0.345943	0.641723
WSIZE	4,362	7.2440	7.297283	4.816848	5.964327	8.512518	9.773352
WAMOUNT	4,362	6.0750	6.050117	4.174387	5.010635	7.078763	8.006368
SECURED	4,362	0.3466	0	0	0	1	1
Switching	4,362	0.0250	0	0	0	0	0
WZScore	4,362	2.5615	2.044501	0.366783	1.022254	3.352394	5.403108
LOSS	4,362	0.1199	0	0	0	0	1
Rating	4,362	0.5759	1	0	0	1	1

Table VI-6 above shows the Control variables used in the paper. WMAT is the winsorized natural log of initial maturity in months. WLEV is the winsorized ratio of total debt to total assets. WSIZE is the winsorized natural log of the market value of equity (mkvaltq). WAMOUNT is the winsorized is the natural log of the initial loan amount. SECURED is a binary variable equal to 1 if the loan contract has a secured provision. Switching is equal to 1 if the firm had adopted Fair Value in the prior quarter. WZScore[32] is the winsored measure of bankruptcy introduced by Altman (1968). LOSS is a binary variable equal to 1 if the firm observed a loss in the prior quarter. Rating is equal to 1 if the firm has an existing credit rating from S&P. The control variables are winsorized at the 0.5% level (1% winsorisation).

Table VI-7: Control variables correlation matrix.

	WMAT	WLEV	WSIZE	WAMOUNT	SECURED	Switching	WZScore	LOSS	Rating
WMAT	1								
WLEV	0.1184*	1							
WSIZE	0.0068	0.021	1						
WAMOUNT	0.1473*	0.1579*	0.6388*	1					
SECURED	0.0572*	-0.0458*	-0.3786*	-0.2376*	1				
Switching	-0.0120	0.0099	0.0542*	0.0422*	-0.0117	1			
WZScore	0.0269	-0.4547*	0.1519*	-0.0748*	-0.0169	-0.0098	1		
LOSS	-0.1317*	-0.0621*	-0.3773*	-0.2566*	0.1227*	-0.0003	-0.1909*	1	
Rating	0.0378*	0.3704*	0.5077*	0.4960*	-0.1849*	0.0393*	-0.2490*	-0.1959	1

Table VI-7 above shows the correlation matrix for the Control variables used in the paper. WMAT is the winsorized natural log of initial maturity in months. WLEV is the winsorized ratio of total debt to total assets. WSIZE is the winsorized natural log of the market value of equity (mkvaltq). WAMOUNT is the winsorized is the natural log of the initial loan amount. SECURED is a binary variable equal to 1 if the loan contract has a secured provision. Switching is equal to 1 if the firm had adopted Fair Value in the prior quarter. WZScore is the winsored measure of bankruptcy introduced by Altman (1968). LOSS is a binary variable equal to 1 if the firm observed a loss in the prior quarter. Rating is equal to 1 if the firm has an existing credit rating from S&P. The control variables are winsorized at the 0.5% level (1% winsorisation). * $p<0.05$

4. Empirical tests and results

We begin this section with presenting the univariate tests, followed by the multivariate results of our hypothesis tests, and conclude with tests conducted on a sub sample of loan contracts by maturity.

B. Univariate Tests

We begin our analysis by conducting univariate tests on the dependent variables. From our hypotheses, we expect that the use of FVA should result in a reduction in the occurrence and

[32] The ZScore is calculated as: ZScore = 1.2 * (Working capital/ Total assets) + 1.4*(Retained earnings/Total assets) + 3.3* (Earnings before interest and taxes / Total assets) + 0.6 * (Market value of equity / Total liabilities) + 0.999 * (Net sales/ Total assets). The relevant compustat/crsp data is as follows: (ZScore = (1.2 * ((actq - lctq)/atq)) + (1.4 * (req / atq)) + (3.3 * (oiadpy/atq)) + (0.6 * (mkvaltq / ltq)) + (0.999 * (revty / atq)))

number of Balance Sheet covenants, and have no effect on the occurrence and number of Income Statement and Non-financial covenants. (Hypothesis 1a,b,c,d). We further predict a reduction in the cost of debt (Hypothesis 2a,b), a reduction in loan contract strictness (Hypothesis 3a,b), and an increase in the number of loan amendments (Hypothesis 4a,b).

Table VI-8: Univariate Analysis

Panel A:	**Regression**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Group	**Dependent Variable**	**BS_COV IND**	**BS_COV IND**	**BS_COV IND**	**BS_COV IND**	**IS_COV IND**	**IS_COV IND**	**IS_COV IND**	**IS_COV IND**	**NF_COV IND**	**NF_COV IND**	**NF_COV IND**	**NF_COV IND**
HCA	Mean (1)	0.29	0.30	0.30	0.29	0.51	0.51	0.51	0.51	0.42	0.42	0.42	0.41
HCA	Observations	3,371	3,360	4,032	4,118	3,371	3,660	4,032	4,118	3,371	3,360	4,032	4,118
FVA	Mean (2)	0.27				0.48				0.37			
FVA	Observations	991				991				991			
FVA1	Mean (2)		0.24				0.48				0.36		
FVA1	Observations		702				702				702		
FVA2	Mean (2)			0.24				0.44				0.31	0.37
FVA2	Observations			330				330				330	244
FVA3	Mean (2)				0.35				0.44				
FVA3	Observations				244				244				
Difference	**(1) - (2)**	0.03**	0.06***	0.06**	-0.06**	0.03	0.02	0.07**	0.07**	0.06***	0.06***	0.11***	0.04
		(1.81)	(3.23)	(2.29)	(-1.87)	(1.47)	(1.13)	(2.32)	(2.10)	(3.28)	(3.11)	(3.78)	(1.22)
Panel B:	**Regression**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Group	**Dependent Variable**	**BS_COV number**	**BS_COV number**	**BS_COV number**	**BS_COV number**	**IS_COV number**	**IS_COV number**	**IS_COV number**	**IS_COV number**	**NF_COV number**	**NF_COV number**	**NF_COV number**	**NF_COV number**
HCA	Mean (1)	0.35	0.36	0.35	0.34	0.88	0.88	0.88	0.88	0.98	0.97	0.97	0.94
HCA	Observations	3,371	3,360	4,032	4,118	3,371	3,660	4,032	4,118	3,371	3,660	4,032	4,118
FVA	Mean (2)	0.31				0.82				0.77			
FVA	Observations	991				991				991			
FVA1	Mean (2)		0.29				0.83				0.76		
FVA1	Observations		702				702				702		
FVA2	Mean (2)			0.27				0.76				0.58	
FVA2	Observations			330				330				330	
FVA3	Mean (2)				0.39				0.71				0.82
FVA3	Observations				244				244				244
Difference	**(1) - (2)**	0.04**	0.07***	0.08**	-0.04	0.07**	0.05	0.12**	0.17***	0.21***	0.21***	0.38***	0.13
		(1.77)	(2.75)	(2.27)	(-1.10)	(1.88)	(1.24)	(2.18)	(2.59)	(3.95)	(3.42)	(4.47)	(1.28)

Table 8: Univariate Analysis (continued)

Panel C:	**Regression**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Group	**Dependent Variable**	**Yield Spread**	**Yield Spread**	**Yield Spread**	**Yield Spread**	**Fees**	**Fees**	**Fees**	**Fees**	**Covenant Intensity Index**	**Covenant Intensity Index**	**Covenant Intensity Index**	**Covenant Intensity Index**
HCA	Mean (1)	164.39	164.67	152.11	153.25	21.87	22.07	21.31	21.55	1.62	1.60	1.60	1.57
HCA	Observations	3,371	3,660	4,032	4,118	3,371	3,660	4,032	4,118	3,371	3,660	4,032	4,118
FVA	Mean (2)	148.78				19.67				1.37			
FVA	Observations	991				991				991			
FVA1	Mean (2)		138.95				17.69				1.35		
FVA1	Observations		702				702				702		
FVA2	Mean (2)			156.48				22.06				1.13	
FVA2	Observations			330				330				330	
FVA3	Mean (2)				138.69				18.23				1.41
FVA3	Observations				244				244				244
Difference	**(1) - (2)**	20.61***	32.60***	-4.38	14.56	2.19	4.38	-0.75	3.32	0.24***	0.25***	0.47***	0.16
		(2.69)	(3.75)	(-0.36)	(1.05)	(0.89)	(1.57)	(-0.19)	(0.75)	(3.60)	(3.23)	(4.39)	(1.27)
Panel D:	**Regression**	**1**	**2**	**3**	**4**								
Group	**Dependent Variable**	**Amendments**	**Amendments**	**Amendments**	**Amendments**								
HCA	Mean (1)	0.26	0.25	0.25	0.24								
HCA	Observations	3,371	3,360	4,032	4,118								
FVA	Mean (2)	0.16											
FVA	Observations	991											
FVA1	Mean (2)		0.16										
FVA1	Observations		702										
FVA2	Mean (2)			0.10									
FVA2	Observations			330									
FVA3	Mean (2)				0.18								
FVA3	Observations				244								
Difference	**(1) - (2)**	0.10***	0.09***	0.15***	0.06								
		(4.08)	(3.22)	(3.76)	(1.37)								

Table VI-8 above shows the univariate test conducted on the difference in the means of the sub groups. The FVA group relates to those loan observations that have been identified as using FVA. FVA1 relates to those loan observations that have been identified as using the Level 1 of FVA. FVA2 relates to those loan observations that have been identified as using the Level 2 of the FVA. FVA3 relates to those loan observations that have been identified as using the Level 3 of the FVA. The HCA group is equal to 1 when the FVA groups are 0 by design. The dependent variables are those that have already been identified previously. Where *,**,*** represent significance at the 10%, 5% and 1% level respectively.

We begin our univariate analysis by examining Panel A of Table 8 above. Panel A shows the results from the tests conducted on the Balance Sheet, Income Statement, and Non-Financial covenant occurrence. Regression A shows the difference between the mean of Balance sheet covenant occurrence between HCA and FVA and is in line with our prediction that FVA use should result in a lower occurrence of Balance sheet covenants.

Regression 1-4 in Panel A show the analysis conducted on the occurrence of Balance Sheet covenants. As can be seen from equations 1-4, the analysis shows that the HCA group has a higher occurrence of Balance sheet covenants compared to the FVA group as a whole, the Level 1 and Level 2 groups, but a lower level of occurrence against the Level 3 group. The results for Level 1 and Level 2 are in accordance with our prediction that the use of FVA should result in a decrease in the occurrence of Balance Sheet covenants. The Level 3 results are also in line with our prediction that level 3 should have an adverse effect on Balance sheet occurrence, that is, lead to an increase (H1a,b).

Regressions 5-8 in Panel A show the analysis conducted on the occurrence of Income Statement covenants. The analysis shows that the HCA group has a higher occurrence of Income Statement covenants compared to the Level 2 and Level 3 groups but the difference is not significant for the FVA group as a whole, and for the Level 1 group. This is in line with our expectation that the Level 1 classification should not affect the occurrence of Income Statement covenants for the Level 1 classification (H1c).

Regressions 9-12 in Panel A show the analysis conducted on the occurrence of Non-financial covenants. The analysis shows that the HCA group has a higher occurrence of Non-financial covenants compared to the FVA group as a whole, the Level 1 and Level 2 groups but the difference is not significant for the Level 3 group. This is not in line with our expectation that the Level 1 classification should not influence the occurrence of Non-financial covenants (H1d).

Panel B above shows the analysis conducted on the number of covenants included in a loan. Regressions 1-4 in Panel B examine the influence of FVA on the number of Balance Sheet covenants. The result is in line with our hypothesis that FVA should result in a decrease in the number of Balance Sheet covenants, and that the Level 1 classification should be affected more than the Level 3 classification (H1a,b).

Panel B above shows the analysis conducted on the number of covenants included in a loan. Regressions 1-4 in Panel B examine the influence of FVA on the number of Balance Sheet covenants. The result is in line with our hypothesis that FVA should result in a decrease in the number of Balance Sheet covenants, and that the Level 1 classification should be affected more than the Level 3 classification (H1a,b).

Regressions 5-8 in Panel B examine the influence of FVA on the number of Income Statement covenants. The results appear to suggest that compared to the HCA group, loan contracts in the FVA group as a whole, the Level 2 and Level 3 classification tend to exhibit a lower number of Income Statement covenants. This result is in line with our expectation for the Level 1 classification, where we predict that the Level 1 classification should not lead to a decrease in the number of Income Statement based loan covenants, while we expect the Level 2 and the Level 3 classifications to lead to a decrease in the number of Income Statement covenants.

Regressions 9-12 in Panel B examine the influence of FVA on the number of Non-financial covenants. The results suggest that compared to loan contracts in the HCA group, loan contracts in the FVA group as a whole, the Level 1 and the Level 2 classification appear to result in a lower number of Non-financial covenants. This is not in line with our hypothesis, where we predict that the use of FVA should not result in a lower number of Non-financial covenants for the Level 1 classification.

Panel C examines the influence of FVA on the initial Yield Spread on the loan contract, the upfront fees on the loan contract, and the level of Covenant Intensity Index. Regressions 1-4 in Panel C examine the influence of FVA on the initial Yield Spread and the results suggest that compared to a loan contract from the HCA group, a loan contract from the Level 1 classification observes a lower yield spread. The FVA group as a whole was also found to exhibit a lower yield spread than the HCA group. However, the Level 2 and the Level 3 classifications were not found to be significant. The results are in line with our expectation that the use of FVA should result in a decrease in the initial yield spread for the FVA group, and that the level 1 classification should observe a lower yield spread compared to the Level 2 and Level 3 classifications.

Regressions 5-8 in Panel C examines the influence of FVA on the upfront fees charged on the loan contract, However, the results suggest that there appears to be no difference between

the upfront fees charged to FVA or HCA firms, nor do the results suggest a difference due to the FVA level classification. This result is not in line with our expectation that the use of FVA should result in a decrease in the upfront loans fees for the FVA group, and that the level 1 classification should observe lower fees compared to the Level 2 and Level 3 classifications.

Regressions 9-12 in Panel C examine the influence of FVA on the initial Covenant Intensity Index as introduced by Bradley and Roberts (2004). The results suggest that compared to a loan in the HCA group, loans in the FVA as a group, the Level 1 and the Level 2 classifications tend to observe a lower Covenant Intensity, which is in line with our expectation that the use of FVA should result in a reduction in the Covenant Intensity Index.

Panel D examines the influence of FVA the number of ex-post loan amendments made to a loan contract. The results suggest that HCA firms observe a higher number of loan amendments compared to the FVA type, and that the Level 1 and 2 classifications tend to observe a lower number of loan amendments compared to HCA firms. This result is not in line with our prediction that the use of FVA, especially the use of the Level 1 classification, should result in an increase in the number of loan amendments.

To summarize, the univariate analysis provides strong support to suggest that the use of FVA may result in a decrease in the occurrence and number of Balance Sheet covenants for loans in the Level 1 classification (H1b), and have no effect on the occurrence and number of Income statement based loan covenants for the Level 1 classification (H1c). We also find that the Loan covenant Intensity Index is lower for loans that use FVA (H3a, 3b). We also find that the use of FVA in general, and the use of the Level 1 classification in particular, leads to a reduction in the yield spread (H2a, 2b). However, we do not find any support to suggest that the use of FVA results in an increase in the number of loan amendments (H4a,4b), nor do we find any support that the use of FVA results in a reduction in loan fees (H2a, 2b). We next examine our hypothesis in greater detail in our main results below.

C. Main Results

In this section, we make use of empirical models mentioned above in order to determine the influence of FVA on the occurrence and number of covenants included in a loan contract (hypothesis 1), the cost of debt on the loan (hypothesis 2), the level of the Bradley and Roberts (2004) Covenant Intensity Index (hypothesis 3), and the number of loan

amendments (hypothesis 4). For all of our main analysis, the dependent variable data is obtained from the LPC/Dealscan database. In Table VI-9, the dependent variables are binary variables which take the value of 1 if the loan observation has a covenant, or 0 otherwise. For Table VI-9, we use a Logit regression, [33] given our dependent is a binary variable. In Table VI-10, we examine the number of Balance Sheet, Income Statement, and Non-financial covenants included in a loan contract. In Table VI-11, we examine the initial yield spread offered on the loan contract, the loan fees, the Covenant Intensity Index, and the number of ex-post loan amendments. In line with prior studies (Demerjian 2011, Demerjian et al 2014, Ball et al, 2013), we include numerous control variables for both firm and loan characteristics. Firm characteristics include leverage (WLEV), size (WSIZE), Rating, Loss, Altman's Z-Score (WZScore), and the firm switching to FVA (Switching). Loan characteristics include provisions for security (Secured), Maturity (WMAT), and Amount (WAMOUNT). To address cross-sectional and temporal correlation, we cluster by borrower and include fixed year (quarter) effects.

The main variables of interest are those associated with the use of FVA. These include the FVA, FVA1, FVA2, and FVA3 variables examined in the tables below.

[33] We find the results of using the probit version of the regression to be almost identical, as a result, we only disclose the results from the logit regressions.

Table VI-9: Loan Covenant Occurrence

VARIABLES	(1) COV_BS_IND	(2) COV_BS_IND	(3) COV_IS_IND	(4) COV_IS_IND	(5) COV_NF_IND	(6) COV_NF_IND
FVA	-0.1165		-0.1170		-0.1756	
	(-1.0691)		(-1.0136)		(-1.4842)	
FVA1		-0.2641**		-0.0397		-0.1433
		(-2.0423)		(-0.2912)		(-0.9996)
FVA2		-0.1424		-0.1209		-0.1810
		(-0.7777)		(-0.6448)		(-0.9444)
FVA3		0.2019		-0.4853**		-0.3143*
		(1.0957)		(-2.4351)		(-1.7154)
WMAT	-0.5306***	-0.5246***	0.7085***	0.7032***	0.1953	0.1917
	(-5.1202)	(-5.0821)	(5.5255)	(5.4667)	(1.5375)	(1.5147)
WLEV	-0.6072**	-0.6115**	-0.6999**	-0.7216**	-0.4505*	-0.4721*
	(-2.5006)	(-2.5099)	(-2.4095)	(-2.4674)	(-1.6786)	(-1.7585)
WSIZE	0.0078	0.0127	0.1297***	0.1349***	-0.0435	-0.0391
	(0.2284)	(0.3715)	(3.2952)	(3.4050)	(-1.2043)	(-1.0780)
WAMOUNT	-0.0951**	-0.0995***	0.0345	0.0336	0.0617	0.0607
	(-2.5367)	(-2.6464)	(0.9442)	(0.9184)	(1.5660)	(1.5402)
SECURED	1.4728***	1.4740***	3.6907***	3.7005***	3.2631***	3.2676***
	(14.5016)	(14.5273)	(23.6976)	(23.6726)	(26.5176)	(26.5064)
Switching	0.0722	0.0592	-0.0989	-0.0720	-0.2732	-0.2642
	(0.3221)	(0.2626)	(-0.3485)	(-0.2522)	(-1.0318)	(-0.9848)
WZScore	-0.0150	-0.0134	0.0667***	0.0647***	0.0183	0.0175
	(-0.8538)	(-0.7543)	(2.8528)	(2.7485)	(0.8742)	(0.8322)
LOSS	-0.2965**	-0.2947**	-0.9374***	-0.9283***	-0.6657***	-0.6621***
	(-2.4215)	(-2.4011)	(-5.2630)	(-5.1880)	(-4.3640)	(-4.3309)
Rating	0.2828**	0.2771**	-0.4625***	-0.4728***	-0.2404*	-0.2466*
	(2.2727)	(2.2325)	(-3.3339)	(-3.4008)	(-1.7374)	(-1.7816)
Constant	-0.4774	-0.4734	-3.1481***	-3.1523***	-1.8628***	-1.8632***
	(-1.4936)	(-1.4805)	(-8.5851)	(-8.5673)	(-5.2943)	(-5.2795)
Observations	4,361	4,361	4,361	4,361	4,361	4,361
Year FE	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the upfront fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract. WMAT is the natural log of maturity at the time of issuance. WLEV is the ratio of total long term debt (dlttq) to total assets (atq). Size is the natural log of market value (mkvalq). Amount is the natural log of the deal amount. Secured is a binomial variable equal to 1 if the loan quarter states that the loan is secured, 0 otherwise. Switching is a binomial variable equal to 1 if the firm switched to Fair Value accounting in the prior period, 0 otherwise. Zscore is the bankruptcy measure constructed using Altman's (1968) measure. Loss is a binary variable equal to 1 if the firm reported negative operating earnings (oiadpy<0), 0 otherwise. Rating is a binary variable equal to 1 if the firm had a credit rating (obtained from S&P), 0 otherwise. The control variables Maturity, Leverage, Size, Amount, and Zscore have been winsorized at the 0.005 level. Robust z-statistics in parentheses:*** p<0.01, ** p<0.05, * p<0.1

Table VI-9, shows the results from the analysis conducted on the occurrence of Balance Sheet, Income Statement and Non-financial loan covenants, where regressions 1 and 2 relate to Balance Sheet covenant occurrence, while regressions 3 and 4 relate to Income Statement covenant occurrence, and finally, regressions 5 and 6 relate to Non-financial covenant occurrence.

In regression 1 the main variable of interest is FVA which has been previously mentioned in section 4 above. The FVA variable was not found to be significant, which is not in line with our hypothesis that the use of FVA should lead to a reduction in the occurrence of Balance

Sheet covenants. Regression 2 builds on the base line regression and replaces the FVA variable with the Level 1 (FVA1), Level 2 (FVA2) and Level 3 (FVA3) variables. Consistent with our hypothesis 1b, we find that the Level 1 (FVA1) classification exhibits a negative and significant relationship, which suggests that the occurrence of Balance Sheet covenants is less likely to occur for the FVA1 classification. The FVA2 and the FVA3 classifications are not found to be significant, which is also in line with our expectation that FVA1 should have the greater impact on the occurrence of Balance Sheet covenants, followed by the level 2 and level 3 classifications.

Regression 3 replaces the dependent variable with the occurrence of Income Statement covenants included in the loan contract. Our main variable of interest is the FVA variable, which we do not find to be significant. Our results suggests that the occurrence of Income Statement covenants is not affected by the use of FVA. This result is in line with our hypothesis (1c) concerning the expected influence of FVA on the occurrence of Income Statement covenants. Regression 4 replaces the FVA variable with the related variables for Level 1, 2 and 3. We do not find FVA1 to be significant and negative, while we find that FVA3 is significant and negative, this is in line with our prediction that the level 1 classification is not expected to influence the occurrence of Income Statement covenants, while the level 3 classification should result in a reduction in the occurrence of Income Statement covenants (Hypothesis 1c).

Regressions 5 and 6 examine the influence of FVA on the occurrence of Non-financial covenants. In line with our expectations, we do not find FVA to have an influence on the occurrence of non-financial covenants, though we do find some evidence that FVA3 causes a decrease in the occurrence of non-financial covenants. This result is also in line with our hypothesis (H1d) that the use of FVA and FVA1 in particular, should not affect the occurrence of Non-financial covenants.

The control variables behave in a manner consistent with prior studies including Demerjian (2011), Christensen and Nikolaev (2012), Nikolaev (2010), and Demerjian et al (2014). We find that the Maturity variable is significant and negative for the Balance sheet tests, and significant and positive for the Income statement tests, suggesting that longer term loans generally tend to see a lower occurrence of BS covenants, but a higher occurrence of IS covenants (Nikolaev, 2010, Ball et al, 2013). The Leverage variable is significant and negative for all the tests, suggesting that covenant use is lower for firms with a higher ratio

of debt to equity (Demerjian, 2011). The size variable suggests that larger firms are more likely to observe IS covenants (Demerjian et al, 2014; Christensen and Nikolaev, 2012). The Deal amount variable suggests that larger loans are less likely to observe BS covenants (Demerjian et al, 2014). The secured variable suggests that all three types of covennats are more likely to occur, if the loan is secured (Christensen and Nikolaev, 2012). The switching variable was not found to be significant. The Z-score variable suggests that a higher Z-Score suggests a higher occurrence of IS covenants (Christensen and Nikolaev, 2012). The LOSS variable suggests a lower number of all three types of covenants occurring ( ). The ratings variable suggests that an existing rating from a credit agency is expected to reduce the occurrence of IS and NF covenants, but increase the occurrence of BS covenants (Ball et al, 2013).

Table VI-10: Loan covenant number

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	COV_BS	COV_BS	COV_IS	COV_IS	COV_NF	COV_NF
FVA	-0.0262		-0.0389		-0.0619	
	(-1.0979)		(-1.1132)		(-1.3202)	
FVA1		-0.0465*		-0.0145		-0.0301
		(-1.6827)		(-0.3648)		(-0.5530)
FVA2		-0.0281		-0.0097		-0.0891
		(-0.7509)		(-0.1725)		(-1.2991)
FVA3		0.0136		-0.1582***		-0.0756
		(0.3176)		(-2.6102)		(-0.9361)
WMAT	-0.1049***	-0.1042***	0.2514***	0.2496***	0.0598	0.0577
	(-4.0005)	(-3.9537)	(7.3659)	(7.3409)	(1.1383)	(1.0986)
WLEV	-0.1327**	-0.1352***	-0.0843	-0.0915	0.1742	0.1687
	(-2.5576)	(-2.5980)	(-0.8936)	(-0.9637)	(1.3904)	(1.3473)
WSIZE	-0.0014	-0.0004	0.0220*	0.0229*	-0.0925***	-0.0912***
	(-0.1867)	(-0.0505)	(1.8151)	(1.8789)	(-5.7905)	(-5.6752)
WAMOUNT	-0.0311***	-0.0318***	0.0190*	0.0189*	0.1030***	0.1030***
	(-3.8046)	(-3.8868)	(1.7062)	(1.7032)	(5.9420)	(5.9376)
SECURED	0.3656***	0.3655***	1.1186***	1.1191***	1.8262***	1.8261***
	(14.3866)	(14.3905)	(33.2791)	(33.3404)	(29.5848)	(29.5686)
Switching	0.0112	0.0104	-0.0407	-0.0341	-0.0166	-0.0191
	(0.2418)	(0.2250)	(-0.4824)	(-0.4022)	(-0.1500)	(-0.1706)
WZScore	0.0048	0.0050	0.0210***	0.0202***	-0.0005	-0.0007
	(0.9571)	(1.0037)	(3.3398)	(3.2091)	(-0.0568)	(-0.0699)
LOSS	-0.0313	-0.0304	-0.2989***	-0.2988***	-0.3284***	-0.3270***
	(-0.9457)	(-0.9206)	(-6.5951)	(-6.6119)	(-4.7157)	(-4.7010)
Rating	0.0194	0.0186	-0.2029***	-0.2045***	0.0370	0.0356
	(0.7369)	(0.7089)	(-4.4925)	(-4.5061)	(0.5855)	(0.5627)
Constant	0.6911***	0.6898***	0.0248	0.0367	0.2911**	0.2920**
	(9.5347)	(9.5047)	(0.2617)	(0.3862)	(2.0340)	(2.0386)
Observations	4,361	4,361	4,361	4,361	4,361	4,361
R-squared	0.1522	0.1529	0.3463	0.3476	0.3863	0.3866
Year FE	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the upfront fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract. WMAT is the natural log of maturity at the time of issuance. WLEV is the ratio of total long term debt (dlttq) to total assets (atq). Size is the natural log of market value (mkvalq). Amount is the natural log of the deal amount. Secured is a binomial variable equal to 1 if the loan quarter states that the loan is secured,

0 otherwise. Switching is a binomial variable equal to 1 if the firm switched to Fair Value accounting in the prior period, 0 otherwise. Zscore is the bankruptcy measure constructed using Altman's (1968) measure. Loss is a binary variable equal to 1 if the firm reported negative operating earnings (oiadpy<0), 0 otherwise. Rating is a binary variable equal to 1 if the firm had a credit rating (obtained from S&P), 0 otherwise. The control variables Maturity, Leverage, Size, Amount, and Zscore have been winsorized at the 0.005 level. Robust z-statistics in parentheses:*** p<0.01, ** p<0.05, * p<0.1

Table VI-10, shows the results from the analysis conducted on the number of Balance Sheet, Income Statement and Non-financial loan covenants, where regressions 1 and 2 relate to the number of Balance Sheet covenants, while regressions 3 and 4 relate to the number of Income Statement covenants, and finally, regressions 5 and 6 relate to the number of Non-financial covenants.

In regression 1 the main variable of interest is FVA which has been previously mentioned in section 4 above. The FVA variable was not found to be significant, which is not in line with our hypothesis that the use of FVA should lead to a reduction in the number of Balance Sheet covenants. Regression 2 builds on the base line regression and replaces the FVA variable with the Level 1 (FVA1), Level 2 (FVA2) and Level 3 (FVA3) variables. Consistent with our hypothesis 1b, we find that the Level 1 (FVA1) classification exhibits a negative and significant relationship, which suggests the FVA1 classification is more likely to observe a lower number of Balance Sheet covenants. The FVA2 and the FVA3 classifications are not found to be significant, which is also in line with our expectation that FVA1 should have the greater impact on the number of Balance Sheet covenants, followed by the level 2 and level 3 classifications.

Regression 3 replaces the dependent variable with the number of Income Statement covenants included in the loan contract. Our main variable of interest is the FVA variable, which we do not find to be significant. Our results suggests that the number of Income Statement covenants is not affected by the use of FVA. This result is in line with our hypothesis (1c) concerning the expected influence of FVA on the number of Income Statement covenants. Regression 4 replaces the FV variable with the related variables for Level 1, 2 and 3. We find that FVA1 is not significant while FVA3 is significant and negative, this is in line with our prediction that the level 3 classification should result in a reduction in the number of Income Statement covenants while the level 1 classification should have no effect (Hypothesis 1c).

Regressions 5 and 6 examine the influence of FVA on the occurrence of Non-financial covenants. In line with our expectations, we do not find FVA, nor any of the level 1, 2 or 3 classifications to have an influence on the number of non-financial covenants (H1d).

The control variables generally behave in a similar manner to that observed in the occurrence regressions.

Table VI-11: Yield spread, Loan fees, Covenant Intensity, and Number of loan amendments

VARIABLES	(1) Yield_Spread	(2) Yield_Spread	(3) FEES	(4) FEES	(5) Covenant Intensity	(6) Covenant Intensity	(7) Amendments	(8) Amendments
FVA	-4.5196		-1.4178		-0.0769*		-0.0361*	
	(-0.6419)		(-0.6700)		(-1.6681)		(-1.6787)	
FVA1		-18.0762**		-3.9760*		-0.0526		0.0032
		(-2.2881)		(-1.7290)		(-1.0044)		(0.1322)
FVA2		24.8546**		2.9633		-0.0817		-0.0665**
		(2.1002)		(0.8588)		(-1.2584)		(-2.2456)
FVA3		-10.9241		-1.9340		-0.1290*		-0.0453
		(-0.7927)		(-0.6094)		(-1.7067)		(-1.1956)
WMAT	11.6703	12.5892	-3.4727	-3.3240	0.1323***	0.1302**	0.0515	0.0493
	(1.3059)	(1.4073)	(-1.0874)	(-1.0420)	(2.5852)	(2.5512)	(1.6026)	(1.5366)
WLEV	7.4306	6.7385	-1.0800	-1.2933	0.0361	0.0271	0.3123***	0.3104***
	(0.4179)	(0.3808)	(-0.2629)	(-0.3136)	(0.3096)	(0.2324)	(4.0760)	(4.0371)
WSIZE	1.6115	1.5532	-1.7710	-1.7458	-0.0631***	-0.0611***	-0.0259***	-0.0255***
	(0.6507)	(0.6273)	(-1.5963)	(-1.5761)	(-3.9291)	(-3.7818)	(-2.9309)	(-2.8739)
WAMOUNT	-0.4204	-0.7166	0.8442	0.7790	0.0835***	0.0831***	0.0497***	0.0502***
	(-0.1511)	(-0.2569)	(0.9104)	(0.8403)	(4.9924)	(4.9674)	(4.8898)	(4.9123)
SECURED	2.1599	2.3549	1.3146	1.3701	3.0009***	3.0011***	0.1719***	0.1717***
	(0.2270)	(0.2481)	(0.3528)	(0.3683)	(53.9137)	(53.8701)	(6.7243)	(6.7110)
Switching	-0.4217	1.3959	-1.2399	-0.9391	-0.0242	-0.0227	-0.0162	-0.0199
	(-0.0212)	(0.0705)	(-0.2385)	(-0.1813)	(-0.2204)	(-0.2072)	(-0.3180)	(-0.3921)
WZScore	0.3025	0.1894	1.0190	1.0058	0.0128	0.0124	0.0013	0.0013
	(0.2052)	(0.1300)	(1.0512)	(1.0317)	(1.4690)	(1.4222)	(0.3174)	(0.2970)
LOSS	-3.8527	-4.6874	-0.6964	-0.7935	-0.3991***	-0.3976***	0.0941**	0.0948**
	(-0.3612)	(-0.4407)	(-0.2438)	(-0.2772)	(-6.4143)	(-6.3848)	(2.2115)	(2.2327)
Rating	-0.3813	-0.4830	1.8793	1.8329	-0.1104*	-0.1126*	-0.0119	-0.0123
	(-0.0443)	(-0.0563)	(0.8101)	(0.7899)	(-1.7628)	(-1.7967)	(-0.3781)	(-0.3938)
COV_BS	0.8294	0.7056	-1.6447	-1.6862				
	(0.1459)	(0.1242)	(-0.8632)	(-0.8810)				
COV_IS	-6.4512*	-6.6229*	1.0937	1.0608				
	(-1.6508)	(-1.7008)	(1.0025)	(0.9693)				
COV_RES	1.9131	1.9892	-0.5842	-0.5763				
	(0.6589)	(0.6840)	(-0.5989)	(-0.5904)				
Constant	66.8356***	69.4409***	28.3957***	28.8288***	0.4503***	0.4566***	-0.0957	-0.0969
	(3.1491)	(3.2788)	(4.0256)	(4.1145)	(3.3021)	(3.3464)	(-1.0633)	(-1.0762)
Observations	4,361	4,361	4,361	4,361	4,361	4,361	4,361	4,361
R-squared	0.1006	0.1021	0.0052	0.0056	0.6376	0.6379	0.0879	0.0883
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the upfront fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract. WMAT is the natural log of maturity at the time of issuance. WLEV is the ratio of total long term debt (dlttq) to total assets (atq). Size is the natural log of market value (mkvalq). Amount is the natural log of the deal amount. Secured is a binomial variable equal to 1 if the loan quarter states that the loan is secured, 0 otherwise. Switching is a binomial variable equal to 1 if the firm switched to Fair Value accounting in the prior period, 0 otherwise. Zscore is the bankruptcy measure constructed using Altman's (1968) measure. Loss is a binary variable equal to 1 if the firm reported negative operating earnings (oiadpy<0), 0 otherwise. Rating is a binary variable equal to 1 if the firm had a credit rating (obtained from S&P), 0 otherwise. The control variables Maturity, Leverage, Size, Amount, and

Zscore have been winsorized at the 0.005 level. Robust z-statistics in parentheses:*** p<0.01, ** p<0.05, * p<0.1

Table VI-11, shows the results from the analysis conducted on initial Yield Spread, the loan fees, the Covenant Intensity Index, and the number of loan amendments. Where regressions 1 and 2 relate to the initial yield spread, regressions 3 and 4 relate to loan fees, regressions 5 and 6 relate to the Covenant Intensity Index, and finally, regressions 7 and 8 relate to the number of loan amendments.

In regression 1 the main variable of interest is FVA which has been previously mentioned in section 4 above. The FVA variable was not found to be significant, which is not in line with our hypothesis (2a) that the use of FVA should lead to a reduction in the initial yield spread offered on the loan. Regression 2 builds on the base line regression and replaces the FVA variable with the Level 1 (FVA1), Level 2 (FVA2) and Level 3 (FVA3) variables. Consistent with our hypothesis 2b, we find that the Level 1 (FVA1) classification exhibits a negative and significant relationship, which suggests the FVA1 classification is more likely to observe a lower initial yield spread. The FVA2 classification was found to exhibit a significant and positive relationship, suggesting that the FVA2 classification leads to an increase in the yield spread, while the FVA3 classification was not found to be significant. The results are in line with our expectation that FVA1 should have the greater impact on the initial yield spread, followed by the level 2 and level 3 classifications.

In regression 3 the main variable of interest is FVA which has been previously mentioned in section 4 above. The FVA variable was not found to be significant, which is not in line with our hypothesis (2a) that the use of FVA should lead to a reduction in the loan fees offered on the loan. Regression 4 builds on the base line regression and replaces the FVA variable with the Level 1 (FVA1), Level 2 (FVA2) and Level 3 (FVA3) variables. Consistent with our hypothesis 2b, we find that the Level 1 (FVA1) classification exhibits a negative and significant relationship, which suggests the FVA1 classification is more likely to observe a lower loan fee. The FVA2 and the FVA3 classifications were not found to be significant. The results are in line with our expectation that FVA1 should have the greater impact on the loan fees, followed by the level 2 and level 3 classifications.

Regression 5 replaces the dependent variable with the Bradley and Roberts (2004) Covenant Intensity Index implied by the loan contract. Our main variable of interest is the FVA variable, which we find to be significant and negative, which suggests that the use of FVA results in a decrease in the Covenant Intensity Index. This result is in line with our hypothesis

(3a) concerning the expected influence of FVA on the expected Covenant Intensity Index. Regression 6 replaces the FV variable with the related variables for Level 1, 2 and 3. We find that FVA3 is significant and negative, this is not in line with our prediction that the level 1 classification (FVA1) should observe a greater reduction in the Covenant Intensity Index (3b). The result for the Covenant Intensity Index could be being caused due to the higher proportion of Income statement to Balance sheet covenants in the sample, and the negative relationship between FVA3 and the number of Income Statement covenants.

Regressions 7 and 8 examine the influence of FVA on the number of ex-post loan amendments. We find the FVA variable to be significant and negative, which suggests that the use of FVA leads to a reduction in the number of ex-post loan renegotiations. This result is not in line with our prediction that the use of FVA should increase the number of loan amendments. In regression 8, we replace the FVA variable with the three FVA level classifications, and we find that the level 2 classification (FVA2) is significant and negative, while the other two classifications are not significant. This result supports our expectation that the level 2 classification is expected to result in a reduction in the number of loan amendments compared to the Level 1 classification.

The control variables behave in a manner consistent with prior studies including Demerjian (2011), Christensen and Nikolaev (2012), Nikolaev (2010), and Demerjian et al (2014). We find the Maturity variable suggests that loans with longer maturities should have a higher covenant intensity index. We find that the number of loan amendments is higher if the firm has a higher leverage ratio. The size variable suggests that covenant intensity and the number of amendments is lower for larger firms. The amount variable suggests that the covenant intensity and the number of amendments is higher for larger loan issues. The secured variables suggests that secured debt is more likely to lead to a higher covenant intensity and a higher number of loan amendments. The Loss variable suggests a lower covenant intensity, but a higher number of loan amendments. Ratings suggest a higher covenant index. Financially, COV_IS suggests a lower yield spread if the loan includes these covenants.

Table VI-12: Determinants of the Covenant Intensity Index

VARIABLES	(1) Two FS Covenants	(2) SECURED	(3) Dividend Sweep	(4) Equity Sweep	(5) Debt Sweep	(6) Asset Sweep
FV1	-0.1317	0.1029	-0.1443	0.0819	-0.1094	-0.0995
	(-1.0063)	(0.8880)	(-1.0575)	(0.4335)	(-0.6695)	(-0.6511)
FV2	-0.0020	-0.0291	-0.0559	-0.9361**	-0.2359	-0.5411**
	(-0.0111)	(-0.1629)	(-0.2973)	(-2.2860)	(-0.8734)	(-2.1573)
FV3	-0.3183*	0.1540	-0.3147*	-0.3594	-0.2736	0.0339
	(-1.6736)	(0.9776)	(-1.7581)	(-1.1288)	(-1.0062)	(0.1472)
WMAT	0.5549***	0.8514***	0.5906***	-0.5982***	-0.0826	0.0123
	(4.6826)	(7.1711)	(4.5396)	(-2.9995)	(-0.4411)	(0.0709)
WLEV	-0.4965*	-0.4705*	-0.4400*	-0.0921	0.6933**	0.7072**
	(-1.7601)	(-1.7937)	(-1.7640)	(-0.2562)	(2.3595)	(2.5334)
WSIZE	0.0387	-0.5282***	-0.0065	-0.1875***	-0.1928***	-0.2811***
	(1.0705)	(-13.6571)	(-0.1784)	(-3.6381)	(-4.3225)	(-6.7505)
WAMOUNT	0.0123	0.0083	-0.0008	0.2203***	0.2912***	0.3148***
	(0.3362)	(0.2360)	(-0.0201)	(3.8282)	(5.8915)	(6.7849)
SECURED	2.4571***		2.8779***	2.3998***	2.7863***	2.9717***
	(22.4415)		(26.3436)	(15.6440)	(20.1685)	(21.4074)
Switching	0.0138	0.0255	-0.1490	0.1154	-0.1216	0.1535
	(0.0543)	(0.1028)	(-0.5828)	(0.2462)	(-0.3132)	(0.4606)
WZScore	0.0672***	0.0323*	0.0056	-0.0079	-0.0158	0.0138
	(3.5319)	(1.7377)	(0.2689)	(-0.2628)	(-0.5974)	(0.6213)
LOSS	-0.8053***	-0.1306	-0.4891***	-0.6331***	-0.4905***	-0.6073***
	(-5.3430)	(-0.9384)	(-3.2967)	(-3.0128)	(-2.7413)	(-3.7226)
Rating	-0.6517***	0.2536**	-0.2099	-0.0992	0.1342	0.1347
	(-4.8668)	(2.1625)	(-1.5465)	(-0.5141)	(0.8183)	(0.8738)
Constant	-2.2269***	1.3949***	-2.6111***	-3.1818***	-3.8480***	-3.3399***
	(-6.6166)	(4.2451)	(-7.2283)	(-6.5501)	(-8.5841)	(-7.9412)
Observations	4,361	4,361	4,361	4,361	4,361	4,361
Year FE	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the upfront fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract. WMAT is the natural log of maturity at the time of issuance. WLEV is the ratio of total long term debt (dlttq) to total assets (atq). Size is the natural log of market value (mkvalq). Amount is the natural log of the deal amount. Secured is a binomial variable equal to 1 if the loan quarter states that the loan is secured, 0 otherwise. Switching is a binomial variable equal to 1 if the firm switched to Fair Value accounting in the prior period, 0 otherwise. Zscore is the bankruptcy measure constructed using Altman's (1968) measure. Loss is a binary variable equal to 1 if the firm reported negative operating earnings (oiadpy<0), 0 otherwise. Rating is a binary variable equal to 1 if the firm had a credit rating (obtained from S&P), 0 otherwise. The control variables Maturity, Leverage, Size, Amount, and Zscore have been winsorized at the 0.005 level. Robust z-statistics in parentheses:*** p<0.01, ** p<0.05, * p<0.1

Table VI-12 above uses a logit regression to decompose the components of the Covenant Intensity Index to examine the reason for the observed results being different from our observations. Each column relates to each of the six components used in constructing the index. As can be observed from the table above, the FVA3 variable exhibits a significant and negative relationship for both the Two FS covenants, and the Dividend Sweep elements, whereas the FVA1 element does not exhibit any significant relationship with any of the six components. The lack of significance for the FVA1 variable for the SECURED, Dividend, Equity, Debt, and Asset sweeps is as expected, given our earlier prediction that FVA1 should not result in any change in the occurrence or number of Non-Financial covenants. The Two

FS covenants insignificance for the FVA1 variable is probably due to the lower degree of Balance sheet covenants to total covenants observed in Table VI-4, and the observation that FVA1 unlike FVA3, has no effect on the number of Income Statement covenants.

Overall, our results for the main analysis provides overall support for our hypothesis. We find strong support to suggest that the use of Level 1 FVA (FVA1) leads to a reduction in the occurrence of Balance Sheet covenants (1b), that the Level 3 FVA classification leads to a reduction in the number of Income Statement covenants (1c). That the use of FVA has no effect on the number of Non-financial covenants (1d). Further, we find strong support that the use of the level 1 FVA classification leads to a reduction in the initial yield spread of the loan and the loan fees (2b), which supports the prediction that the Level 1 classification is seen as improving contracting ability by improving the information set available to the lender. We however, do not find any direct evidence to support our prediction concerning the number of loan amendments (3a,b), but do find that the Level 2 classification results in a decrease in the number of loan amendments. We do not find any evidence for the influence of FVA1 on the Covenant Intensity Index (4b), though we do find some support for FVA use resulting in a decrease in the level of the Covenant Intensity Index (4a).

D. Loan contract maturity

In this section, we examine whether the influence of Fair Value accounting on loan contracts varies according to the maturity of the loan. Plantin et al (2008) suggest that the damage done by marking-to-market (Fair Value accounting) is greatest when the claims are (1) long lived, (2) illiquid, and (3) senior.

When we regress the use of FVA on firm and loan characteristics in

Table VI-3, we do not find loan maturity (WMAT) to be a significant variable. Therefore, in this section, we attempt to determine whether FVA does influence loan contracts differently depending on the initial maturity of the contract.

While we do not explicitly model the difference in maturities in our theoretical model, our model assumes that FVA is seen as being informative to the degree that it reduces the information asymmetry being faced by the lender. In such a setting, we would expect the effect of FVA to be stronger in the longer term maturity spectrum, that is, we would expect that our predictions for the influence of FVA hold for the longer term maturities compared to the shorter term maturities, where information asymmetry issues may be of a lower

concern to the lender. Bharath et al (2008) examine the relationship between accounting quality and the maturity of private and public debt contracts and find that in private debt contracts, firms with higher quality accounting are able to negotiate a longer maturity.

We bifurcate our sample into two and created a 'long maturity' subsample as that which contains initial loan maturities of greater than 60 months,[34] and the 'short maturity' subsample as that which contains initial loan maturities of less than 60 months.

Table VI-13: Long Loan Maturity and the effect of Fair Value (control variables not shown)

VARIABLES	(1) COV_BS_IND	(2) COV_IS_IND	(3) COV_NF_IND	(4) COV_BS	(5) COV_IS	(6) COV_NF	(7) Yield_Spread	(8) FEES	(9) Covenant Intensity	(10) Amendments
FVA1	-0.285	-0.225	-0.218	-0.057*	-0.110**	-0.131*	-12.323	-1.240	-0.162**	-0.015
	(-1.515)	(-1.310)	(-1.138)	(-1.817)	(-2.254)	(-1.863)	(-1.164)	(-0.415)	(-2.416)	(-0.506)
FVA2	-0.303	-0.042	-0.490	-0.018	0.053	0.006	24.816	6.122	0.002	-0.070*
	(-0.960)	(-0.153)	(-1.467)	(-0.361)	(0.606)	(0.064)	(1.484)	(1.107)	(0.025)	(-1.868)
FVA3	0.019	-0.719**	-0.381	0.019	-0.190**	0.012	-18.667	-4.760	-0.090	-0.101**
	(0.065)	(-2.085)	(-1.375)	(0.293)	(-2.021)	(0.101)	(-0.772)	(-1.129)	(-0.802)	(-2.510)
Constant	2.968**	4.531***	4.923***	0.565	1.706***	0.426	307.684***	20.027	1.364**	-1.848***
	(2.001)	(2.847)	(3.066)	(1.513)	(4.365)	(0.624)	(3.807)	(0.848)	(2.108)	(-4.054)
Observations	2,233	2,233	2,233	2,233	2,233	2,233	2,233	2,233	2,233	2,233
R-squared	0.075	0.355	0.393	0.077	0.357	0.465	0.100	0.008	0.671	0.115
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the upfront fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract.Control variables have been previously identified in section 5. Robust z-statistics in parentheses:*** p<0.01, ** p<0.05, * p<0.1

Table VI-14: Short Loan Maturity and the effect of Fair Value (control variables not shown)

VARIABLES	(1) COV_BS_IND	(2) COV_IS_IND	(3) COV_NF_IND	(4) COV_BS	(5) COV_IS	(6) COV_NF	(7) Yield_Spread	(8) FEES	(9) Covenant Intensity	(10) Amendments
FVA1	-0.196	0.189	-0.014	-0.023	0.100*	0.073	-22.732*	-7.928**	0.073	0.014
	(-1.168)	(0.985)	(-0.072)	(-0.546)	(1.738)	(0.913)	(-1.852)	(-2.380)	(0.965)	(0.363)
FVA2	-0.117	-0.188	0.066	-0.063	-0.056	-0.143	29.048*	0.424	-0.136	-0.072
	(-0.507)	(-0.864)	(0.278)	(-1.177)	(-0.872)	(-1.509)	(1.705)	(0.095)	(-1.569)	(-1.573)
FVA3	0.233	-0.350	-0.277	-0.011	-0.137**	-0.123	-4.332	0.890	-0.151	-0.021
	(1.016)	(-1.405)	(-1.156)	(-0.197)	(-2.036)	(-1.122)	(-0.254)	(0.211)	(-1.499)	(-0.370)
Constant	-0.927**	-3.592***	-2.705***	0.443***	-0.080	0.233	86.138***	23.853***	0.242	-0.010
	(-2.320)	(-7.621)	(-6.109)	(4.743)	(-0.669)	(1.247)	(2.742)	(2.658)	(1.389)	(-0.084)
Observations	2,128	2,128	2,128	2,128	2,128	2,128	2,128	2,128	2,128	2,128
R-squared	0.152	0.340	0.335	0.203	0.354	0.317	0.116	0.013	0.608	0.087
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the upfront fees charged on originating the loan. Covenant Intensity Index is the benchmark

[34] Our long maturity sample is based on loan observations above the median of 60 months, while the short maturity comprises of observations below the median.

created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract.Control variables have been previously identified in section 5. Robust z-statistics in parentheses:*** p<0.01, ** p<0.05, * p<0.1

For ease of accessibility, we only show the main variables of interest in Table VI-13 and Table VI-14 above. Table VI-13 relates to the analysis conducted on longer term maturity loan observations, while Table VI-14 relates to analysis conducted on shorter term maturity loan observations. For brevity, we will only discuss the main results from the analysis. From Table VI-13, we can see that the Level 1 (FVA1) variable observes a significant and negative relationship for the COV_BS, COV_IS, and COV_NF variable. This result is in line with our expectation that the Level 1 classification (FVA1) should result in a decrease in the number of Balance Sheet covenants (COV_BS), however, the results are not consistent with our hypothesis for the Income Statement (COV_IS) or the Non-financial covenants (COV_NF). We also find that the Level 1 classification observes a significant and negative relationship in the Covenant Intensity Index analysis, which is in line with our expectation that the Level 1 classification should result in a reduction in the Covenant Intensity Index. We do not find any evidence to support our expectation concerning the relationship between Level 1 and the number of ex-post loan amendments, however, we do find a significant and negative relationship between the Levels 2 and 3 classifications and the number of Amendments, which gives support to our prediction that the Levels 2and 3 classifications should have a negative impact on the number of loan contract amendments (4b). We do not find any evidence to support our prediction concerning the effect of FVA on the cost of debt (2a,b). The results can be viewed as giving some evidence that the Level 1 classification is seem as being beneficial, given that there is a general decrease in all three types of covenants and yet the Yield spread and fees, though not significant are negative, therefore suggesting that for a given level of debt cost, lenders are issuing a lower number of covenants. This explanation would be in line with the CCH. Another argument for the beneficial impact is that the level 2 and 3 variables exhibit negative and significant results for the amendments test, suggesting that these two levels might be seen as less informative by lenders.

In Terms of the Shorter-term maturity loans, we find mixed results. We find that the Level 3 classification results in a reduction in the number of Income Statement covenants and an increase in the number of Income Statement covenants for the Level 1 classification, and that the Level 1 classification leads to a reduction in the Yield Spread and loan fees (2a,b),

while the Level 2 classification leads to an increase in the Yield Spread. We do not find any other significant relationships in our analysis on the shorter maturity sample.

Overall, the analysis shows some support that FVA is seen to be beneficial for longer-term debt, the Level 1 FVA classification appears to exhibit a lower number of Balance Sheet, Income Statement and Non-financial covenants, and a lower level of loan contract strictness, as measured by the Covenant Intensity Index. We also find that the Levels 2 and 3 classifications result in a decrease in the number of loan amendments. The analysis on the shorter spectrum of the loan contract maturity is more mixed, with some evidence that the Level 3 classification leads to the reduction in the number of Income Statement covenants, and evidence in support of a decreased level loan costs for the Level 1 classification (H2b).

5. Robustness tests

Our theoretical paper assumes that under the FVA regime, the lender obtains the true realisation of the transfer (that is, faces lower information asymmetry). In essence, our theoretical paper assumes that the use of FVA improves transparency and reduces the information asymmetry being faced by the lender. However, it may be possible that the relationships that we have observed between FVA use and contract design may be influenced by an external (omitted) variable that actually captures any change in financial reporting transparency. If this is indeed the case, then we are incorrectly assigning significant relationships to FVA, which may be driven by another omitted variable.

In order to control for this potential issue, we run a number of distinct robustness tests, wherein we include two recently used variables that have been introduced to account for financial statement transparency and/or the relationship between contract design and accounting information, we first rerun our analysis using these two measures as the explanatory variables, and then we include these variables as additional explanatory variables alongside the FVA classifications.

Some caution should be used when comparing the results from our main analysis with the results from the robustness tests given that we are not able to fully replicate our sample for the two additional explanatory variables.

A. Daske et al (2013)

The first measure (s) we use is that introduced by Daske et al (2013). Daske et al (2013) examine the liquidity and cost of capital effects around voluntary and mandatory IFRS

adoption and introduce a classification of "Serious" and "Label" adopters using firm level changes in reporting incentives, actual reporting behaviour, and the external reporting environment. Daske et al (2013) refer to "serious" adopters as those firms that are "serious" about the changes in their reporting strategy.

They use three proxies to partition the firms into serious and label adopters. The idea is to attempt to identify firms that experience substantial increases in their reporting incentives. These firms are deemed more likely to make major improvements to their reporting strategy. Two of the proxies focus on the determinants of firm's incentives, while the remainder relies on the firm's actual reporting behaviour.

The *Reporting Incentives* ("serious 1") is calculated as the first and primary factor (out of the two that are retained) when applying factor analysis to the following four firm attributes: firm size (natural log of the US$ market value), financial leverage (total liabilities to total assets), profitability (return on assets), and growth opportunities (book to market ratio). The factor increases in size, leverage, profitability and growth, similar to Daske et al (2013).

The second proxy relies on the accrual based characteristics of financial reporting. The *Reporting Behaviour* ("serious 2") variable is constructed as the ratio of the absolute value of accruals to the absolute value of cash flows (multiplied by -1, so that higher amounts signify more transparent reporting) The variable is then scaled by operating cash flows in order to serve as a performance adjustment. Accruals are calculated as the difference between net income before extraordinary items and the cash flow from operations.

The third proxy relies on the ability to capture external changes affecting a firm's reporting incentives. In line with Daske et al (2013), we compute the *Reporting Environment* ("serious 3") variable as the natural log of the number of analysts following the firm (plus one). For firms without any analyst coverage in I/B/E/S, we set the analyst following to zero.

In order to reduce measurement errors and to allow for the incentives to change over time, we calculate 3 year rolling averages relative to the observed quarter for each reporting proxy. We then use the distribution of changes to classify firms with above median changes compared to their industry peers.[35] Firms with rolling averages above the median industry moving averages are coded as "serious" adopters (coded as 1), and with below median

[35] We use the entire COMPUSTAT/CRSP dataset for US firms in constructing the SERIOUS variables.

changes as label adopters (coded as 0). This classification methodology is slightly different compared to that used in Daske et al(2013) in order for us to allow firms to be classified as more or less transparent compared to their peers and to allow firms to move between being more or less transparent over the time period under question. [36]

Table VI-15: SERIOUS1 as an explanatory variable (control variables not shown)

VARIABLES	(1) COV_BS_IND	(2) COV_IS_IND	(3) COV_NF_IND	(4) COV_BS	(5) COV_IS	(6) COV_NF	(7) Yield_Spread	(8) FEES	(9) Covenant Intensity	(10) Amendments
SERIOUS1	0.105	0.013	0.025	0.024	0.033	-0.011	11.252	-0.871	0.004	0.027
	(0.894)	(0.106)	(0.205)	(0.899)	(0.824)	(-0.205)	(1.451)	(-0.402)	(0.069)	(1.008)
Constant	-0.343	-3.160***	-1.943***	0.721***	0.068	0.196	87.161***	22.428***	0.366*	-0.177*
	(-0.793)	(-6.431)	(-3.981)	(7.411)	(0.509)	(1.000)	(3.046)	(2.961)	(1.923)	(-1.784)
Observations	2,738	2,738	2,738	2,738	2,738	2,738	2,738	2,738	2,738	2,738
R-squared	0.112	0.334	0.355	0.148	0.338	0.384	0.093	0.004	0.638	0.093
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the initial loan fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract. Control variables have been previously identified in section 5. Robust z-statistics in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table VI-15 above, shows the regressions with the SERIOUS1 variable included as the explanatory variable replacing the three FVA classifications. As can be seen from the table, non of the tests were found to be significant, and therefore, we can conclude that the SERIOUS1 variable in itself, is not a significant explanatory variable for the expected influence on the loan contract design.

Table VI-16: SERIOUS2 as an explanatory variable (control variables not shown)

VARIABLES	(1) COV_BS_IND	(2) COV_IS_IND	(3) COV_NF_IND	(4) COV_BS	(5) COV_IS	(6) COV_NF	(7) Yield_Spread	(8) FEES	(9) Covenant Intensity	(10) Amendments
SERIOUS2	-0.042	0.019	-0.038	-0.023	0.029	-0.050	7.463	-1.184	-0.042	0.021
	(-0.435)	(0.183)	(-0.360)	(-1.057)	(0.939)	(-1.148)	(0.984)	(-0.607)	(-1.016)	(0.846)
Constant	-0.475	-3.088***	-1.925***	0.510***	-0.072	0.133	147.738***	25.553***	0.191	-0.311***
	(-1.137)	(-6.384)	(-4.106)	(5.345)	(-0.512)	(0.664)	(4.649)	(2.893)	(0.973)	(-2.821)
Observations	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908
R-squared	0.118	0.343	0.365	0.153	0.344	0.391	0.087	0.004	0.645	0.094
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the initial loan fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of

[36] Daske et al(2013) use their methodology in order to examine the influence of IFRS adoption in 2005, so their methodology is centred around this time period. We adjust their methodology to allow our classifications to be more dynamic.

ex-post loan amendments in a loan contract. Control variables have been previously identified in section 5. Robust z-statistics in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table VI-16 above, shows the regressions with the SERIOUS2 variable included as the explanatory variable replacing the three FVA classifications. As can be seen from the table, non of the tests were found to be significant, and therefore, we can conclude that the SERIOUS2 variable in itself, is not a significant explanatory variable for the expected influence on the loan contract design.

Table VI-17: SERIOUS3 as an explanatory variable (control variables not shown)

VARIABLES	(1) COV_BS_IND	(2) COV_IS_IND	(3) COV_NF_IND	(4) COV_BS	(5) COV_IS	(6) COV_NF	(7) Yield_Spread	(8) FEES	(9) Covenant Intensity	(10) Amendments
SERIOUS3	-0.674**	0.151	-0.158	-0.135*	0.124	-0.125	-12.066	-3.353	-0.070	0.087***
	(-2.211)	(0.379)	(-0.538)	(-1.866)	(1.159)	(-0.934)	(-0.536)	(-0.727)	(-0.497)	(2.651)
Constant	0.411	-3.037***	-1.513***	0.710***	-0.202	0.267	145.247***	39.306**	0.313	-0.367***
	(0.810)	(-5.085)	(-2.885)	(5.995)	(-1.205)	(1.168)	(3.674)	(2.448)	(1.347)	(-3.360)
Observations	3,306	3,306	3,306	3,306	3,306	3,306	3,306	3,306	3,306	3,306
R-squared	0.120	0.337	0.358	0.153	0.344	0.390	0.097	0.005	0.640	0.095
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the initial loan fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract. Control variables have been previously identified in section 5. Robust z-statistics in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table VI-17 above, shows the regressions with the SERIOUS3 variable included as the explanatory variable replacing the three FVA classifications. As can be seen from the table, the COV_BS_IND and the COV_BS tests were found to be significant and negative, suggesting that the SERIOUS3 variable results in a reduction in the occurrence and number of Balance sheet covenants. The Amendments test was found to be significant and positive, suggesting that the SERIOUS3 variable results in an increase in the number of loan amendments. However, non of the other tests were found to be significant. Overall, the SERIOUS3 variable exhibits similar results to the FVA1 variable in terms of the Balance sheet covenants, and exhibits the expected FVA1 results for the loan amendments test.

Table VI-18: SERIOUS1 as an additional explanatory variable (control variables not shown)

VARIABLES	(1) COV_BS_IND	(2) COV_IS_IND	(3) COV_NF_IND	(4) COV_BS	(5) COV_IS	(6) COV_NF	(7) Yield_Spread	(8) FEES	(9) Covenant Intensity	(10) Amendments
FVA1	-0.343**	-0.007	-0.295	-0.045	-0.008	-0.019	-30.753***	-2.926	-0.039	-0.017
	(-2.118)	(-0.039)	(-1.547)	(-1.257)	(-0.153)	(-0.277)	(-3.350)	(-1.075)	(-0.562)	(-0.578)
FVA2	-0.009	0.013	-0.022	-0.009	-0.024	-0.189**	45.543***	5.962	-0.135	-0.036
	(-0.041)	(0.056)	(-0.089)	(-0.186)	(-0.346)	(-2.166)	(2.819)	(1.288)	(-1.594)	(-0.905)
FVA3	0.079	-0.320	-0.279	-0.053	-0.172***	0.033	-27.511	-0.692	-0.083	-0.066*
	(0.346)	(-1.473)	(-1.269)	(-1.052)	(-3.025)	(0.323)	(-1.603)	(-0.173)	(-0.850)	(-1.706)
SERIOUS1	0.091	0.013	0.016	0.022	0.033	-0.012	10.351	-0.954	0.002	0.027
	(0.771)	(0.102)	(0.128)	(0.838)	(0.820)	(-0.229)	(1.339)	(-0.439)	(0.035)	(0.977)
Constant	-0.345	-3.146***	-1.935***	0.730***	0.089	0.190	93.760***	22.826***	0.376**	-0.169*
	(-0.800)	(-6.391)	(-3.965)	(7.501)	(0.663)	(0.967)	(3.295)	(3.028)	(1.977)	(-1.702)
Observations	2,738	2,738	2,738	2,738	2,738	2,738	2,738	2,738	2,738	2,738
R-squared	0.114	0.335	0.356	0.149	0.340	0.385	0.098	0.005	0.638	0.094
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the initial loan fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract. Control variables have been previously identified in section 5. Robust z-statistics in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table VI-18 above, shows the regressions with the SERIOUS1 variable included as an additional explanatory variable. The regressions are identical to those conducted in the main analysis and the control variables behave in a similar manner. The addition of the SERIOUS1 variable does adversely affect the significance of the Level 1 results for the COV_BS test, but the remainder of the results are in line with those obtained from the main analysis, and the Level 3 classification is still found to be consistent and negatively related to the number of income statement and to the number of ex-post loan amendments. On the contrary, the inclusion of the variable indicates that both the Level 1 classification leads to a reduction in the occurrence of Balance Sheet covenants and a reduction in the loan's yield spread. Overall, the results are generally consistent with those found in the main analysis.

Table VI-19: SERIOUS2 as an additional explanatory variable (control variables not shown)

VARIABLES	(1) COV_BS_IND	(2) COV_IS_IND	(3) COV_NF_IND	(4) COV_BS	(5) COV_IS	(6) COV_NF	(7) Yield_Spread	(8) FEES	(9) Covenant Intensity	(10) Amendments
FVA1	-0.378**	0.056	-0.201	-0.058*	0.012	-0.010	-24.829***	-1.887	-0.022	-0.011
	(-2.499)	(0.335)	(-1.082)	(-1.779)	(0.241)	(-0.141)	(-2.613)	(-0.692)	(-0.329)	(-0.395)
FVA2	-0.011	0.024	0.004	-0.005	-0.010	-0.168**	37.990**	4.868	-0.112	-0.043
	(-0.049)	(0.102)	(0.016)	(-0.111)	(-0.149)	(-1.998)	(2.426)	(1.091)	(-1.358)	(-1.135)
FVA3	0.050	-0.343	-0.297	-0.057	-0.163***	0.022	-26.416	-1.023	-0.088	-0.073*
	(0.212)	(-1.573)	(-1.322)	(-1.143)	(-2.847)	(0.219)	(-1.546)	(-0.257)	(-0.913)	(-1.906)
SERIOUS2	-0.047	0.012	-0.047	-0.025	0.026	-0.053	7.054	-1.157	-0.047	0.018
	(-0.487)	(0.119)	(-0.455)	(-1.186)	(0.827)	(-1.214)	(0.929)	(-0.594)	(-1.127)	(0.739)
Constant	-0.485	-3.080***	-1.917***	0.511***	-0.067	0.129	149.558***	25.697***	0.191	-0.310***
	(-1.163)	(-6.351)	(-4.088)	(5.377)	(-0.480)	(0.643)	(4.749)	(2.908)	(0.974)	(-2.813)
Observations	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908
R-squared	0.120	0.344	0.366	0.155	0.346	0.392	0.091	0.005	0.645	0.095
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the initial loan fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract. Control variables have been previously identified in section 5. Robust z-statistics in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table VI-19 above, shows the regressions with the SERIOUS2 variable included as an additional explanatory variable. The regressions are identical to those conducted in the main analysis except that we include the SERIOUS2 variable as another additional explanatory variable. The addition of the SERIOUS2 variable does not adversely affect the significance or direction of the results obtained from the main analysis for the Level 1 (FVA1) and the Level 3 (FVA3) classifications, and the Level 1 classification is still found to be significant and negative for the Balance sheet covenants (H1b), and the Yield spread (H2b), and to have no effect on the Income and the Non-financial covenants (H1c,d). We also find that the FVA3 classification has a significant and negative relationship with the amendments test. Overall, the results are generally consistent with those found in the main analysis and the control variables behave in a similar manner to those in the main analysis.

Table VI-20: SERIOUS3 as an additional explanatory variable (control variables not shown)

VARIABLES	(1) COV_BS_IND	(2) COV_IS_IND	(3) COV_NF_IND	(4) COV_BS	(5) COV_IS	(6) COV_NF	(7) Yield_Spread	(8) FEES	(9) Covenant Intensity	(10) Amendments
FVA1	-0.378**	0.056	-0.201	-0.058*	0.012	-0.010	-24.829***	-1.887	-0.022	-0.011
	(-2.499)	(0.335)	(-1.082)	(-1.779)	(0.241)	(-0.141)	(-2.613)	(-0.692)	(-0.329)	(-0.395)
FVA2	-0.011	0.024	0.004	-0.005	-0.010	-0.168**	37.990**	4.868	-0.112	-0.043
	(-0.049)	(0.102)	(0.016)	(-0.111)	(-0.149)	(-1.998)	(2.426)	(1.091)	(-1.358)	(-1.135)
FVA3	0.050	-0.343	-0.297	-0.057	-0.163***	0.022	-26.416	-1.023	-0.088	-0.073*
	(0.212)	(-1.573)	(-1.322)	(-1.143)	(-2.847)	(0.219)	(-1.546)	(-0.257)	(-0.913)	(-1.906)
SERIOUS3	-0.047	0.012	-0.047	-0.025	0.026	-0.053	7.054	-1.157	-0.047	0.018
	(-0.487)	(0.119)	(-0.455)	(-1.186)	(0.827)	(-1.214)	(0.929)	(-0.594)	(-1.127)	(0.739)
Constant	-0.485	-3.080***	-1.917***	0.511***	-0.067	0.129	149.558***	25.697***	0.191	-0.310***
	(-1.163)	(-6.351)	(-4.088)	(5.377)	(-0.480)	(0.643)	(4.749)	(2.908)	(0.974)	(-2.813)
Observations	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908
R-squared	0.120	0.344	0.366	0.155	0.346	0.392	0.091	0.005	0.645	0.095
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the initial loan fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract. Control variables have been previously identified in section 5. Robust z-statistics in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table VI-20 above, shows the regressions with the SERIOUS3 variable included as an additional explanatory variable. The regressions are identical to those conducted in the main analysis except that we include the SERIOUS3 variable as another additional explanatory

variable. The addition of the SERIOUS3 variable does not adversely affect the significance or direction of the results obtained from the main analysis for the Level 1 (FVA1) and the Level 3 (FVA3) classifications, and the Level 1 classification is still found to be significant and negative for the Balance sheet covenants occurrence (H1b), and the Yield spread (H2b), and to have no effect on the Income and the Non-financial covenants (H1c,d). We find that the FVA2 classification has a positive and significant relationship with the Yield Spread, and a negative and significant relationship with the COV_NF test. We also find that the FV3 classification has a negative and significant relationship with the Amendments test and the COV_IS tests. Overall, the results are generally consistent with those found in the main analysis and the control variables behave in a similar manner to those in the main analysis.

Overall, including either of the three "serious" variables as an additional explanatory variable or the replacement explanatory variable was not found to adversely affect the results, and the results are found to be generally consistent with those found in the main analysis for the Level 1 classification.

B. Demerjian (2011)

The second robustness variable we use is the Volatility Ratio (VR) introduced by Demerjian (2011). The Volatility Ratio is used as a proxy for the exposure to balance sheet based accounting rules. The Volatility Ratio is defined as:

$$VR = \frac{Book\ Value\ Volatility}{Adjusted\ Net\ Income\ Volatility}$$

Book value volatility is the five year standard deviation of the change in book value. The change in book value is the change in retained earnings (REQ) with the annualized dividend (DVPSPQ x CSHOQ) added back. The change in book value captures all non-capital changes in shareholder's equity, including changes that are not recorded through the income statement. Adjusted net income volatility is the five year standard deviation of net income (NIQ) minus special items (SPIQ) and non-operating income and expense (NOPIQ).

Table VI-21: Volatility Ratio (VR) as an explanatory variable (control variables not shown)

VARIABLES	(1) COV_BS_IND	(2) COV_IS_IND	(3) COV_NF_IND	(4) COV_BS	(5) COV_IS	(6) COV_NF	(7) Yield_Spread	(8) FEES	(9) Covenant Intensity	(10) Amendments
VR	0.000	-0.000	-0.000*	0.000	-0.000	-0.000	0.001	-0.000	-0.000	-0.000
	(1.070)	(-0.060)	(-1.738)	(1.129)	(-1.573)	(-0.014)	(0.444)	(-0.434)	(-0.110)	(-0.148)
Constant	-0.288	-2.883***	-1.580***	0.722***	0.090	0.241	87.452***	30.004***	0.434**	-0.162*
	(-0.724)	(-6.461)	(-3.622)	(8.192)	(0.740)	(1.341)	(3.343)	(3.078)	(2.510)	(-1.809)
Observations	3,298	3,298	3,298	3,298	3,298	3,298	3,298	3,298	3,298	3,298
R-squared	0.118	0.335	0.359	0.152	0.343	0.389	0.097	0.006	0.639	0.095
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the initial loan fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract. Control variables have been previously identified in section 5. Robust z-statistics in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table VI-21 above, shows the regressions with the Volatility Ratio (VR) variable included as the explanatory variable. The VR variable only appears to exhibit a significant and negative relationship for the COV_NF_IND test. The remainder of the tests were not found to be significant.

Table VI-22: Volatility Ratio (VR) (control variables not shown)

VARIABLES	(1) COV_BS_IND	(2) COV_IS_IND	(3) COV_RES_IND	(4) COV_BS	(5) COV_IS	(6) COV_RES	(7) Yield_Spread	(8) FEES	(9) Covenant Intensity	(10) Amendments
FV1	-0.291**	0.005	-0.159	-0.047	0.004	-0.017	-21.306**	-3.925	-0.029	-0.002
	(-1.961)	(0.033)	(-0.972)	(-1.484)	(0.083)	(-0.264)	(-2.368)	(-1.460)	(-0.458)	(-0.074)
FV2	-0.194	0.047	-0.110	-0.038	0.010	-0.156**	27.323*	3.315	-0.108	-0.064*
	(-0.906)	(0.220)	(-0.486)	(-0.881)	(0.161)	(-1.993)	(1.871)	(0.777)	(-1.433)	(-1.839)
FV3	0.051	-0.394*	-0.337*	-0.048	-0.136*	-0.027	-22.529	-1.218	-0.121	-0.050
	(0.241)	(-1.817)	(-1.673)	(-1.112)	(-1.960)	(-0.301)	(-1.473)	(-0.335)	(-1.419)	(-1.357)
VR	0.000	-0.000	-0.000*	0.000	-0.000	-0.000	0.001	-0.000	-0.000	-0.000
	(1.109)	(-0.078)	(-1.781)	(1.140)	(-1.577)	(-0.019)	(0.449)	(-0.418)	(-0.117)	(-0.160)
Constant	-0.287	-2.883***	-1.577***	0.728***	0.102	0.242	91.325***	30.413***	0.446***	-0.158*
	(-0.724)	(-6.441)	(-3.613)	(8.273)	(0.842)	(1.350)	(3.498)	(3.115)	(2.580)	(-1.774)
Observations	3,298	3,298	3,298	3,298	3,298	3,298	3,298	3,298	3,298	3,298
R-squared	0.120	0.336	0.360	0.154	0.344	0.390	0.100	0.006	0.640	0.096
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

COV_BS_IND is a binary variable equal to 1 if the loan contract has a Balance sheet covenant. COV_IS_IND is a binary variable equal to 1 if the loan contract has an Income statement covenant. COV_NF_IND is a binary variable equal to 1 if the loan contract has a non-financial covenant. COV_BS is the number of Balance sheet covenants in a loan contract. COV_IS is the number of Income statement covenants in a loan contract. COV_NF is the number of non-financial covenants in a loan contract. Yield_Spread is the additional yield offered on the loan contract compared to a corresponding Treasury security. FEES is the initial loan fees charged on originating the loan. Covenant Intensity Index is the benchmark created by Bradley and Roberts (2004) and is a variable that takes a value between 0 and 6. Amendments is the number of ex-post loan amendments in a loan contract. Control variables have been previously identified in section 5. Robust z-statistics in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table VI-22 above, shows the regressions with the Volatility Ratio (VR) variable included as an additional explanatory variable. The addition of the VR variable does not adversely affect the significance or direction of the results obtained from the main analysis for the Level 1 (FVA1) and the Level 3 (FVA3) classifications, and the Level 1 classification is still found to be significant and negative for the Balance sheet covenants occurrence (H1b), and

the Yield spread (H2b), and to have no effect on the Income and the Non-financial covenants (H1c,d). Overall, the results are generally consistent with those found in the main analysis and the control variables behave in a similar manner to those in the main analysis.

Overall, from the two additional explanatory variables, we can observe that there is some influence of FVA1 on the occurrence and number of Balance sheet covenants and on the Yield spread. We can also observe that the FVA3 classification generally tends to exhibit a negative relationship with the number of loan amendments and with the number of income statement covenants.

6. Conclusion

The paper examines the relation between FVA and debt contract design. Specially, the main interest is to examine any possible impact of FVA on covenant inclusion, the loan's cost of debt, the Covenant Intensity Index and the number of ex-post loan amendments. We use a sample of US private debt contracts over the 2008-2013 period and find that the use of FVA results in the decrease of Balance Sheet, and Income Statement covenants. We further find mixed evidence that the use of FVA results in a lower cost of debt, a lower covenant intensity index and in a lower number of ex-post loan amendments.

However, our results are not homogenous. In particular, when we focus the FVA classification, we find that the Level 1 classification exhibits a lower occurrence and number of Balance sheet covenants, while the Level 3 classification tends to exhibit a lower occurrence and number of Income statement covenants. In terms of the cost of debt we find that the lower yield spread and loan fees are generally exhibited by the Level 1 classification, while we find that the Level 2 classification tends to exhibit a decrease in the number of ex-post loan amendments. In terms of the level of the Covenant Intensity Index, we generally find that it is the Level 3 classification that tends to exhibit a decrease. The Covenant Intensity Index result may be largely due to the observed effect of the Level 3 classification on the Income Statement covenants and the higher percentage of Income Statement covenants in the Covenant Intensity Index and the observed negative relationship between FVA3 and Dividend sweep covenants.

Overall, our results are consistent with evidence found by other papers. For example, Demerjian et al (2014) argue that FVA may result in a reduction in the contracting ability of the financial information, especially, the level 2 and 3 classifications, which they and Liao et al(2013) argue is more 'noisy' and may include more 'biased judgements' compared to

the Level 1 classifications. Our results suggest that the Level 1 classification results in a reduction in the number of Balance sheet covenants and an associated reduction in the Cost of debt, whereas the Level 3 classification results in a reduction in the number of Income Statement covenants, but with no associated reduction in the Cost of debt We also find that the Level 2 classification observes a reduction in the ex-post number of amendments, which in accordance with Roberts and Sufi (2009), may imply a reduced accrual of new, relevant information. Therefore, our results are generally consistent with those found earlier, that is, we find that the Level 1 classification is deemed to be more 'value relevant' to lenders compared to the Level 3 classification.

When we partition our sample into two subsample according to the median initial maturity, we find that for longer term maturities, the Level 1 classification leads to a reduction in the number of Balance Sheet, Income Statement, and Non-financial covenants, and in the Covenant Intensity Index. We also find that the Level 3 classification exhibits a reduction in the number of ex-post loan amendments. The shorter maturity subsample exhibits a reduction in the cost of debt for the Level 1 classification and an increase in the number of Income Statement covenants. The results are in line with our earlier analysis where we do not find maturity to be a key explanatory variable for the use of FVA and also appear give some support for Platin et al (2008) who suggest that the damage done by FVA is greatest when the claims are long lived, however, our results suggest that this may be less of an issue for the FVA level 1 classification.

For our robustness tests, we use Daske et al's (2013) "serious" versus "label" adopters as a proxy to test for differences in financial reporting behaviour and environment, and Demerjian's (2011) Volatility Ratio measure. Both of these measures are meant to capture differences in the quality of financial reporting and therefore, are used as additional explanatory variables that could explain the results obtained in the main regression. Even with these variables included as additional variables in our regressions, we find that the results from the main regressions generally hold, that is, we find that the significance and direction of the results found for the Level 1 and the Level 3 classification are still found to exist with the additional variables; the level 1 classification leads to a decrease in the occurrence and number of Balance Sheet loan covenants, while the Level 3 classification leads to a decrease in the occurrence and number of Income Statement loan covenants. We also find some evidence that the Level 1 classification leads to a lower yield spread and that

the Level 2 and 3 classifications lead to a reduction in the number of ex-post loan amendments.

This paper contributes to the capital structure and accounting literature, by providing insights into the impact of FVA on debt contract design, its influence on covenant inclusion and the covenant intensity index, on loan amendments and on the cost of debt. Prior studies have tried to link 'conservative' accounting to covenant design and to cost of debt, however, we show a link between the recently introduced FVA regime and its ability to affect debt contract design and the cost of debt. In particular, similar to Demerjian et al (2014), we are able to show that the Level 1 FVA classification appears to be more value relevant compared to the Level 3 classification and consistent with Demerjian et al (2014) and others, we posit that this may arise due to the lack of contractibility introduced by the bias and judgement inherent in the Level 2 and Level 3 classifications compared to the Level 1 classification.

Our results suggest that lenders may prefer certain accounting regimes over others and that in the context of private loan contracts, lenders appear to prefer accounting regimes that are meant to improve the information set available to them by disclosing asset and liability values, and the resulting gains and losses in a timely manner.

Our results also suggest that the influence of FVA on Loan contracts is not uniform, and that the different FVA classification have differing influences on the occurrence and number of Balance Sheet, Income Statement, and Non-Financial covenants, the cost of debt, the covenant intensity index, and the number of ex-post loan amendments.

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Appendix

Table VI-23 below gives definitions and calculation methodology used to calculate the control variables used in the analysis. We winsorise the Maturity, Leverage, Size, Amount, and the Z-score variables at the 1% level.

Table VI-23: Definition of control variables used

Variable	Calculation and source
WMAT	Calculated as the natural logarithm of the initial months to maturity for each observation. Data obtained from LPC/Dealscan.
WLEV	Calculated as the ratio of total debt to total assets. Data obtained from COMPUSTAT/CRSP.
WSIZE	Natural logarithm of the market value of equity. Data obtained from COMPUSTAT/CRSP.
WAMOUNT	Calculated as the natural logarithm of the ratio of the total loan amount to total assets. Data obtained from LPC/Dealscan and COMPUSTAT/CRSP.
SECURED	Binary variable equal to 1 if the loan is secured against a firm asset. Data obtained from LPC/Dealscan.
Switching	Binary variable takes the value of 1 if the borrower has switched to Fair Value accounting in the prior quarter.
LOSS	Binary variable equal to 1 if the firm exhibits a loss in the prior period. Data obtained from COMPUSTAT/CRSP.
Rating	Binary variable takes the value of 1 if the borrower has a credit rating in the firm year, or 0 otherwise. Data obtained from Standard and Poors/Thomson.
WZScore	Calculated using Altman's (1968) formula: ZScore = 1.2 * (Working capital/ Total assets) + 1.4*(Retained earnings/Total assets) + 3.3* (Earnings before interest and taxes / Total assets) + 0.6 * (Market value of equity / Total liabilities) + 0.999 * (Net sales/ Total assets). The relevant compustat/crsp data is as follows: (ZScore = (1.2 * ((actq - lctq)/atq)) + (1.4 * (req / atq)) + (3.3 * (oiadpy/atq)) + (0.6 * (mkvaltq / ltq)) + (0.999 * (revty / atq)))

VII. Conclusion

In a world of symmetric information, firm insiders and outsiders would have the same information and the firm's choice of accounting policy would not matter. However, once we move away from a symmetric information world to a world in which there is asymmetric information, as we see in practise, accounting policy can have an impact on how outsiders view the firm. This thesis examines certain situations in which a firm may change its accounting policy and thereby, change the information set available to outsiders.

The first paper examines the influence of uncertainty avoidance on the cost of equity benefits associated with IFRS adoption around the world. We focus on firm-level heterogeneity in the consequences, recognising that firms can differ in their motivations and the influence of uncertainty avoidance (UAI) (Hofstede, 1980, 2001) on IFRS. Some firms may adopt new IFRS standards as a means to signal their quality, others may adopt without making any material changes to their reporting policies, while some may adopt IFRS as part of a broader strategy to improve their commitment to greater capital market transparency. The possibility of such differences implies significant heterogeneity in the economic consequences around IFRS adoption due to selection effects.

Our main prediction for the influence of uncertainty avoidance on the cost of equity benefit derived from IFRS adoption is that the prevailing cultural attitudes towards uncertainty in higher UAI countries, would result in a higher marginal benefit to investors compared to lower UAI countries. We predict this hypothesis due to our expectation that the pre-existing cultural norms in higher UAI countries would pre-dispose these countries to adopt accounting standards that would provide the disclosure of a lower quality or quantity of information compared to that offered by IFRS adoption. Hence, these types of countries should benefit to a greater degree from IFRS adoption compared to lower UAI countries.

We predict that Voluntary adopters would benefit more in higher UAI countries than their counterparts and compared to mandatory and voluntary/mandatory adopters due to the ability to signal their quality by going counter to the cultural norms of society.

To show the existence of such effects, we create and use two sets of variables in the paper. The first set of variables takes into account whether the firm observation uses IFRS, and in later analysis, whether the observation contains a Mandatory, Voluntary/Mandatory, or a Voluntary adopter. The second set of variables takes into account the influence of

uncertainty avoidance on the firm's adoption decision, and the resulting economic consequences (UAI). We examine the economic consequences of uncertainty avoidance on IFRS adoption for mandatory, voluntary/mandatory, and voluntary adoption firms in a large EU based panel dataset from 2000-2013.

We find that for IFRS adopters as a whole, the UAI variable has a significant positive relationship on cost of equity. That is, higher UAI implies a higher cost of equity. These results are consistent with our hypothesis. We further find that for the cost of equity, the three SERIOUS variables as introduced by Daske et al (2013), are significant and negative, implying that improved financial reporting transparency results in a decrease in the cost of equity. In terms of the interaction effect, in line with our hypothesis, we find that the use of IFRS and a higher UAI score for the country interact to lead to a reduction in the cost of equity, that is, the interaction terms are significant and negative, however, we find that the benefit from the interaction term is not sufficient to overcome the effect of the UAI variable.

Examining the IFRS group by mandatory, voluntary, and voluntary/mandatory adopters suggests the effect of IFRS adoption and UAI are not uniform, but rather that mandatory adopters in higher UAI countries appear to benefit more than firms in lower UAI countries or any other type of IFRS adopter. We find that voluntary/mandatory firms tend to suffer from an increase in their cost of equity.

We check the robustness of the results and replace the UAI variable with several competing cross-country variables used in prior literature. We find that all the other competing cross-country variables previously used generally appear to suggest that uncertainty avoidance (or a proxy of UAI), may be able to partly explain the cross-country differences in the economic benefits from IFRS adoption. Therefore, the robustness tests provide additional support to our conclusions from the main analysis.

The study also contributes to the literature on the role of the influence of uncertainty avoidance on IFRS adoptions and the resulting capital market outcomes. It highlights the role of cross-country differences in uncertainty avoidance, and how these differences can be used to explain part of the heterogeneity in capital market outcomes across firms and countries. We present evidence that suggests that the level of uncertainty avoidance can influence the economic benefits that firms can accrue from the adoption of IFRS. Also, unlike other existing studies on IFRS, we do not focus on just cross sectional data, but we

also include time series data. This allows us to examine whether the differences between countries and firms are persistent or time specific. This is important as there may be incorrect inferences drawn, if we only focused on a specific time period.

Finally, we caution the reader that the results should not be interpreted as implying that uncertainty avoidance is the primarily driver for the cross-country heterogeneity in cost of equity, but rather a factor that is able to explain part of the difference in the results. We do not claim that managers were able to benefit from using the level of uncertainty avoidance in their respective countries. But rather the paper claims that managers *could* have benefited from the level of uncertainty avoidance. While we show that uncertainty avoidance plays an important role for the sign and magnitude of the market reactions from IFRS adoption, the tests are not designed to analyse the relative contribution of standards and incentives.

The second paper examines the design and renegotiation of covenants in debt contracts under asymmetric information using Garleanu and Zwiebel's (2009) model as a starting point. In particular, we examine the influence of two distinct accounting regimes on the design and renegotiation of covenants. The model has a setting wherein future firm investments are efficient in some states but also result in a transfer from the Lender to the firm. We model symmetric information concerning the efficiency of the investments, however, the firm is better informed about any potential transfers compared to the lender. Information acquisition differs under the two different accounting regimes. Under the FVA regime, the Lender obtains the true realisation of the transfer value prior to the investment being made. However, under the HCA regime, the lender has to acquire this information at a cost.

Given the above setting, we show that the presence of asymmetric information between the firm and the lender, and between the two different accounting regimes leads to the allocation of a greater amount of decision rights (covenants) ex ante to the more uniformed party, which is the lender facing a HCA regime, then would be the case under symmetric information.

The model also suggests that firms that use FVA should be rewarded ex ante by the lender via requiring a lower yield on the debt contracts. Finally, the model suggests that the trade-off between the potential cost savings from delaying information and the potential benefits from acquiring information earlier, results in the lender being more likely to renegotiate under the FVA regime.

We extend the base model and allow for the HCA firm to revalue prior to renegotiation and to share the information with the lender. We show that under this scenario, unlike the HCA firm in the base model, the firm that revalues is able to observe a less ex-ante covenants, and a lower cost of debt.

We also extend our base model and allow for the FVA regime to produce information with noise, which we assume is a proxy for the Level 2 and Level 3 classifications. We are able to show that under the base model, in our extension, the firm will observe a higher number of loan covenants and a higher cost of debt.

Our paper compliments existing literature by incorporating the influence of accounting choice on contract design and renegotiation. In particular, the paper is the first of its type that examines the influence of FVA on debt covenants, initial yield, covenant strictness and renegotiations.

The third paper examines the relation between FVA and debt contract design. Specially, the main interest is to examine any possible impact of FVA on covenant inclusion, the loan's cost of debt, the Covenant Intensity Index and the number of ex-post loan amendments. We use a sample of US private debt contracts over the 2008-2013 period and find that the use of FVA results in the decrease of Balance Sheet, and Income Statement covenants. We further find mixed evidence that the use of FVA results in a lower cost of debt, a lower covenant intensity index and in a lower number of ex-post loan amendments.

However, our results are not homogenous. In particular, when we focus the FVA classification, we find that the Level 1 classification exhibits a lower occurrence and number of Balance sheet covenants, while the Level 3 classification tends to exhibit a lower occurrence and number of Income statement covenants. In terms of the cost of debt we find that the lower yield spread and loan fees are generally exhibited by the Level 1 classification, while we find that the Level 2 classification tends to exhibit a decrease in the number of ex-post loan amendments. In terms of the level of the Covenant Intensity Index, we generally find that it is the Level 3 classification that tends to exhibit a decrease. The Covenant Intensity Index result may be largely due to the observed effect of the Level 3 classification on the Income Statement covenants and the higher percentage of Income Statement covenants in the Covenant Intensity Index and the observed negative relationship between FVA3 and Dividend sweep covenants.

Overall, our results are consistent with evidence found by other papers. For example, Demerjian et al (2014) argue that FVA may result in a reduction in the contracting ability of the financial information, especially, the level 2 and 3 classifications, which they and Liao et al(2013) argue is more 'noisy' and may include more 'biased judgements' compared to the Level 1 classifications. Our results suggest that the Level 1 classification results in a reduction in the number of Balance sheet covenants and an associated reduction in the Cost of debt, whereas the Level 3 classification results in a reduction in the number of Income Statement covenants, but with no associated reduction in the Cost of debt We also find that the Level 2 classification observes a reduction in the ex-post number of amendments, which in accordance with Roberts and Sufi (2009), may imply a reduced accrual of new, relevant information. Therefore, our results are generally consistent with those found earlier, that is, we find that the Level 1 classification is deemed to be more 'value relevant' to lenders compared to the Level 3 classification.

When we partition our sample into two subsample according to the median initial maturity, we find that for longer term maturities, the Level 1 classification leads to a reduction in the number of Balance Sheet, Income Statement, and Non-financial covenants, and in the Covenant Intensity Index. We also find that the Level 3 classification exhibits a reduction in the number of ex-post loan amendments. The shorter maturity subsample exhibits a reduction in the cost of debt for the Level 1 classification and an increase in the number of Income Statement covenants. The results are in line with our earlier analysis where we do not find maturity to be a key explanatory variable for the use of FVA and also appear give some support for Platin et al (2008) who suggest that the damage done by FVA is greatest when the claims are long lived, however, our results suggest that this may be less of an issue for the FVA level 1 classification.

For our robustness tests, we use Daske et al's (2013) "serious" versus "label" adopters as a proxy to test for differences in financial reporting behaviour and environment, and Demerjian's (2011) Volatility Ratio measure. Both of these measures are meant to capture differences in the quality of financial reporting and therefore, are used as additional explanatory variables that could explain the results obtained in the main regression. Even with these variables included as additional variables in our regressions, we find that the results from the main regressions generally hold, that is, we find that the significance and direction of the results found for the Level 1 and the Level 3 classification are still found to

exist with the additional variables; the level 1 classification leads to a decrease in the occurrence and number of Balance Sheet loan covenants, while the Level 3 classification leads to a decrease in the occurrence and number of Income Statement loan covenants. We also find some evidence that the Level 1 classification leads to a lower yield spread and that the Level 2 and 3 classifications lead to a reduction in the number of ex-post loan amendments.

This paper contributes to the capital structure and accounting literature, by providing insights into the impact of FVA on debt contract design, its influence on covenant inclusion and the covenant intensity index, on loan amendments and on the cost of debt. Prior studies have tried to link 'conservative' accounting to covenant design and to cost of debt, however, we show a link between the recently introduced FVA regime and its ability to affect debt contract design and the cost of debt. In particular, similar to Demerjian et al (2014), we are able to show that the Level 1 FVA classification appears to be more value relevant compared to the Level 3 classification and consistent with Demerjian et al (2014) and others, we posit that this may arise due to the lack of contractibility introduced by the bias and judgement inherent in the Level 2 and Level 3 classifications compared to the Level 1 classification.

Our results suggest that lenders may prefer certain accounting regimes over others and that in the context of private loan contracts, lenders appear to prefer accounting regimes that are meant to improve the information set available to them by disclosing asset and liability values, and the resulting gains and losses in a timely manner.

Our results also suggest that the influence of FVA on Loan contracts is not uniform, and that the different FVA classification have differing influences on the occurrence and number of Balance Sheet, Income Statement, and Non-Financial covenants, the cost of debt, the covenant intensity index, and the number of ex-post loan amendments.

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